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Environmental Radiation Data: Report 23-24

(U.S.) Eastern Environmental Radiation Facility
Montgomery, AL

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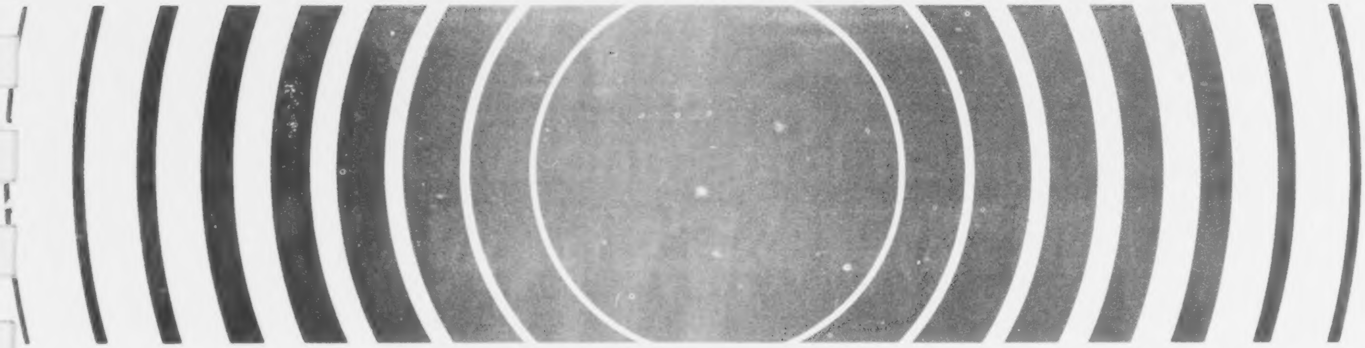
(July - December 1980)



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16. ABSTRACT

Environmental Radiation Data(ERD) is compiled and published quarterly(five months after the quarter being monitored). The report includes data from the Environmental Radiation Ambient Monitoring System(ERAMS) and similar networks operated by contributing states. The ERAMS monitors environmental media for radioactive contaminants in air, precipitation, surface water, drinking water, and milk samples collected by state and local agencies throughout the United States. Specific radiochemical analyses include gross alpha, gross beta, gamma, tritium, ^{14}C, ^{85}Kr, ^{131}I, $^{89-90}Sr$, ^{226}Ra, $^{238-239}Pu$, and $^{234-235-238}U$. All data and associated 2 sigma counting errors are reported in standard units. Precision and accuracy of the date are ensured by duplicate analyses and participation in internal and external quality assurance programs.

17. KEY WORDS AND DOCUMENT ANALYSIS

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ENVIRONMENTAL

RADIATION

DATA

REPORT 23 - 24

April 1981

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Office of Radiation Programs

Eastern Environmental Radiation Facility
P. O. Box 3009
Montgomery, Alabama 36193

Preface

Environmental Radiation Data (ERD) is compiled and distributed quarterly by the Office of Radiation Programs' Eastern Environmental Radiation Facility (EERF), Montgomery, Alabama. Data from ERAMS, and similar networks operated by contributing States, Canada, Mexico, and the Pan American Health Organization are reported in (ERD).

The Environmental Radiation Ambient Monitoring System (ERAMS) was established in 1973 by the U. S. Environmental Protection Agency's Office of Radiation Programs (ORP). The ERAMS is comprised of nationwide sampling stations that provide air, surface, and drinking water and milk samples from which environmental radiation levels are derived. The major emphasis for ERAMS is toward identifying trends in the accumulation of long-lived radionuclides in the environment.

Sampling locations are selected to provide the best possible combination of radiation source monitoring (such as surface water downstream from a nuclear power reactor) and wide population coverage.

The radiation analyses performed on these samples include gross alpha and gross beta levels, as well as specific analyses for uranium fuel cycle related radionuclides. The latter category includes but is not limited to uranium, plutonium, iodine, and krypton, which are released into the environment from stationary sources such as nuclear power reactors, fuel fabrication and reprocessing plants.

ENVIRONMENTAL RADIATION DATA

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The intent of EPA's Office of Radiation Programs in establishing the Environmental Radiation Ambient Monitoring System was to provide continuous, accurate and usable environmental radiation data for the public. Therefore, new data reporting procedures were developed to allow better interpretation of the data. The most significant change in this reporting procedure is that all specific radionuclide analyses will be reported as the counting results indicate, whether the number is negative, zero, or positive.

Reporting Rationale

Frequently, concentrations of a radionuclide in environmental media are close to zero. When the actual concentration of a nuclide is zero, the net counting results should statistically show a distribution of negative and positive numbers about zero. This occurs when the background count is subtracted from a sample which has only background activity. Prior to July 1975, ERAMS data were not reported numerically when the results were less than a specified reporting level or minimum detectable level. The present reporting procedure allows all the data to be reported and evaluated statistically without an arbitrary cutoff of small or negative numbers. This approach will facilitate estimates of bias in the nuclide analyses and will allow better evaluation of distributions and trends in environmental data.

When reviewing the data in this report, caution should be exercised in the interpretation of individual negative values. Obviously, a negative activity value does not have physical significance. Such numbers, however, are significant when taken together with other observations which indicate that the true value of a distribution is near zero. When an average of several measurements produces a result less than zero, this indicates a negative bias in the measurement procedure.

(1) Reported Values

Specific Analyses - All specific radionuclide analyses will be reported as the counting results indicate, whether the number is negative, zero, or positive. Numerical values given are as of sample collection date.

Gross Analyses - The actual value of gross radioactivity measurements will be reported, unless the value is below the minimum detectable level (MDL) at the 2 sigma confidence level, then < minimum detectable level will be reported.

MDL is defined as the 3 sigma error of the background. A tabulation of MDL´s is given in the following table.

(2) Reported Error Terms

Each reported value for specific analyses will be accompanied by a counting error term at the 2 sigma (95%) confidence interval. Potassium concentrations are determined by specific activity analyses. Error terms are therefore reported as counting errors. At the very low levels characteristic of most ERAMS measurements, counting error is the greatest contributor to overall error.

(3) Significant Figures

All reported values will be rounded to no more than three significant figures. The last significant figure will be increased by one if the figure following is five or greater, otherwise it is left unchanged.

(4) Reporting Levels

The reporting units, smallest increments for reporting, and minimum detectable levels for each isotope are shown in table 1. Smallest increments are sometimes considerably smaller than minimum detectable amounts to avoid truncation errors in averaging.

(5) Averages

Averages will be calculated along with appropriate error terms in an annual summary and analysis of ERAMS data. In calculating these averages, all values of individual data including negative numbers will be utilized. Averages will not be included in ERD quarterly reports.

TABLE 1

ERAMS Reporting Increments and Minimum Detectable Levels for Radionuclide Analyses

Radionuclide	Media	Reporting Units	Reporting Increments	Minimum Detectable Levels
Gross alpha	Water	pCi/l	1 pCi/l	2 pCi/l
Gross beta	Air	pCi/m^3	.01 pCi/m^3	.01 pCi/m^3
	Water	pCi/l	1 pCi/l	1 pCi/l
	Precipitation	nCi/m^2	.01 nCi/m^2	.01 nCi/m^2(a)
Tritium	Water	nCi/l	.1 nCi/l	.2 nCi/l
	Milk	nCi/l	.1 nCi/l	.2 nCi/l
Carbon-14	Milk	pCi/l	1 pCi/l	15 pCi/l
Krypton-85	Ambient Air	pCi/m^3	.1 pCi/m^3	2 pCi/m^3
Plutonium-238, 239	Air	aCi/m^3	.1 aCi/m^3	.015 pCi(b) per sample
	Milk	pCi/l	.001 pCi/l	.015 pCi per sample
	Water	pCi/l	.001 pCi/l	.015 pCi per sample
Uranium-234, 235,238	Air	aCi/m^3	.1 aCi/m^3	.015 pCi(b) per sample
	Milk	pCi/l	.001 pCi/l	.015 pCi per sample
	Water	pCi/l	.001 pCi/l	.015 pCi per sample
Radium-226	Water	pCi/l	.1 pCi/l	.1 pCi/l
Strontium-90	Milk	pCi/l	.1 pCi/l	1 pCi/l
	Water	pCi/l	.1 pCi/l	1 pCi/l

Radionuclide	Media	Reporting Units	Reporting Increments	Minimum Detectable Levels
Strontium-89	Milk	pCi/l	1 pCi/l	5 pCi/l$^{(c)}$
Iodine-131	Milk	pCi/l	1 pCi/l	10 pCi/l$^{(c)}$
	Water	pCi/l	1 pCi/l	10 pCi/l$^{(c)}$
	Water (specific radiochemical analysis)	pCi/l	.1 pCi/l	.4 pCi/l
Iodine-129	Milk	fCi/l	.1 fCi/l	.4 fCi/l
Iodine-127	Milk	g/l	10 g/l	10 g/l
Cesium-137	Milk	pCi/l	1 pCi/l	10 pCi/l
	Water	pCi/l	1 pCi/l	10 pCi/l
Barium-140	Milk	pCi/l	1 pCi/l	10 pCi/l$^{(c)}$
	Water	pCi/l	1 pCi/l	10 pCi/l$^{(c)}$
Potassium	Milk	g/l	.1 g/l	.12 g/l
	Water	g/l	.1 g/l	.12 g/l
Potassium-40	Water	pCi/l	1 pCi/l	100 pCi/l

(a) The value in terms of nCi/m^2 would be dependent on precipitation (mm).
(b) This value in terms of pCi/m^3 would be dependent on the air volume.
(c) Activity as of the day of counting.

ENVIRONMENTAL RADIATION
AMBIENT MONITORING SYSTEM (ERAMS)

SECTION I. Air Program

Airborne Particulates and Precipitation

Gross beta radioactivity measurements and certain specific analyses are performed on air particulates and precipitation samples as indicator measurements in assessing the general (national) impact of all contributing sources on environmental levels of radiation.

Airborne particulates are collected continuously at 22 field stations representing wide geographic coverage, including present and potential sources of environmental radioactivity. Collections are also made at 45 standby stations as needed and/or annually. Sampling sites are located throughout the United States, Virgin Islands, and the Panama Canal.

Filters (10-cm charcoal impregnated cellulose) from air samplers are changed twice weekly and field measurements are made with a G-M survey meter at 5 hours and 29 hours after collection to allow for radon and thoron daughter product decay. Field estimates are reported to appropriate EPA officials by telephone or mail depending on the activity levels found.

The filters are sent to EERF for more sensitive analyses in a low background beta counter. Gamma scans are performed on all filters showing laboratory gross beta counts greater than 1 pCi/m^3. The lower gross beta values reported for laboratory measurements are largely due to the decay of radionuclides which occurred between the times of the field estimates and laboratory measurements.

Precipitation samples are collected at the 22 field stations where air filters are collected. These samples are also sent to EERF where they are composited monthly for tritium, gross beta activity measurements and gamma scans.

These locations also correspond to airborne particulate and drinking water sampling locations selected for plutonium analyses. Plutonium-238, -239, and uranium-234, -235, and -238 analyses are performed annually on precipitation samples collected during March - May.

Tables 2 - 7 present the monthly average gross beta concentration for airborne particulates and precipitation from July - December 1980. A compilation of individual measurements is available from the EPA, EERF, Montgomery, AL 36193.

The July - December 1980 for tritium in precipitation samples at the selected stations are shown in Tables 8 - 9.

TABLE 2

AIRBORNE PARTICULATES AND PRECIPITATION
GROSS BETA CONCENTRATION
JULY 1980

		AIRBORNE PARTICULATES						PRECIPITATION		
		5-HR FIELD ESTIMATE			EERF LAB MEASUREMENT					
LOCATION	# SAM	MAX	MIN	AVG	MAX	MIN	AVG	DEPTH	ACT.	SPECIFIC GAMMA ACT.
		(pCi/m^3)			(pCi/m^3)			(mm)	(nCi/m^2)	(pCi/l)
AL:MONTGOMERY	9	2.0	0.2	0.5	0.02	0.01	0.01	47.5	0.10	ND
CA:BERKELEY	6	0.1	<0.1	<0.1	0.01	<0.01	<0.01	NS		
CA:LOS ANGELES	9	1.1	0.2	0.5	0.01	0.01	0.01	NS		
CO:DENVER	8	0.7	0.3	0.5	0.01	0.01	0.01	59.9	0.14	ND
FL:MIAMI	7	NM	NM	NM	0.01	0.01	0.01	180.0	0.14	ND
ID:IDAHO FALLS	7	NM	NM	NM	0.02	<0.01	0.01	NS		
IL:CHICAGO	8	1.0	0.3	0.5	0.04	0.01	0.02	13.3	0.03	ND
ND:BISMARCK	7	0.8	0.2	0.5	0.02	0.01	0.01	46.7	0.22	ND
NJ:TRENTON	10	4.8	<0.1	1.7	0.03	0.01	0.02	29.9	0.07	ND
NM:SANTA FE	8	0.7	<0.1	0.4	0.02	0.01	0.01	NS		
NV:LAS VEGAS	8	1.2	0.5	0.9	0.04	0.01	0.02	7.3	0.04	ND
NY:NEW YORK CITY	9	0.3	0.1	0.2	0.03	0.01	0.02	20.1	0.03	ND
NY:NIAGARA FALLS	9	0.3	<0.1	0.2	0.02	0.01	0.02	37.9	0.08	ND
OH:COLUMBUS	8	2.0	0.2	0.7	0.03	0.01	0.02	77.5	0.12	ND
OK:OKLAHOMA CITY	21	2.9	0.7	1.8	0.18	0.02	0.03	NS		
OR:PORTLAND	9	NM	NM	NM	0.01	<0.01	0.01	NS		
PA:HARRISBURG	13	1.6	0.3	0.8	0.03	0.01	0.02	37.6	0.08	ND
PA:PITTSBURGH	8	0.4	<0.1	0.1	0.02	0.01	0.02	99.8	0.16	ND
SC:BARNWELL	3	0.1	<0.1	0.1	0.02	0.01	0.01	15.0	0.04	ND
SC:COLUMBIA	9	0.6	0.2	0.4	0.04	0.01	0.02	32.5	0.16	ND
TN:KNOXVILLE	8	1.4	0.3	0.9	0.07	0.01	0.03	NS		
VA:LYNCHBURG	9	1.3	0.1	0.6	0.03	0.01	0.02	100.0	1.20	ND
VA:VIRGINIA BEACH	8	0.2	0.1	0.1	0.02	0.01	0.01	67.5	0.33	ND
WV:CHARLESTON	9	1.1	0.1	0.5	0.04	0.01	0.02	23.6	0.04	ND

MINIMUM DETECTABLE LIMIT FOR FIELD ESTIMATES - .1 pCi/m^3
MINIMUM DETECTABLE LIMIT FOR LAB MEASUREMENT - .01 pCi/m^3

ND	NO GAMMA ACTIVITY DETECTABLE
NS	NO SAMPLE
NM	NO MEASUREMENT

TABLE 3

AIRBORNE PARTICULATES AND PRECIPITATION
GROSS BETA CONCENTRATION
AUGUST 1980

		AIRBORNE PARTICULATES						PRECIPITATION		
		5-HR FIELD ESTIMATE			EERF LAB MEASUREMENT					
LOCATION	# SAM	MAX	MIN	AVG	MAX	MIN	AVG	DEPTH	ACT.	SPECIFIC GAMMA ACT.
		(pCi/m^3)			(pCi/m^3)			(mm)	(nCi/m^2)	(pCi/l)
AL:MONTGOMERY	9	1.0	0.4	0.7	0.02	0.01	0.02	NS		
CA:BERKELEY	9	0.1	<0.1	<0.1	0.01	<0.01	0.01	NS		
CA:LOS ANGELES	9	1.0	<0.1	0.4	0.02	0.01	0.01	NS		
CO:DENVER	9	1.3	0.3	0.8	0.02	0.01	0.01	NS		
FL:MIAMI	8	NM	NM	NM	0.02	0.01	0.01	109.0	0.14	ND
ID:IDAHO FALLS	8	NM	NM	NM	0.03	0.01	0.02	22.1	0.06	ND
IL:CHICAGO	9	1.0	0.1	0.5	0.03	0.01	0.02	66.3	0.11	ND
MI:LANSING	8	1.0	0.1	0.2	0.02	0.01	0.01	4.8	<0.01	ND
ND:BISMARCK	7	1.1	<0.1	0.5	0.02	0.01	0.01	118.5	0.13	ND
NJ:TRENTON	6	2.9	<0.1	1.2	0.04	0.02	0.03	45.7	0.31	ND
NM:SANTA FE	9	1.0	0.1	0.4	0.02	0.01	0.01	NS		
NV:LAS VEGAS	8	1.2	0.3	0.9	0.02	0.01	0.02	NS		
NY:NEW YORK CITY	9	0.3	0.1	0.2	0.03	0.01	0.02	39.0	0.11	ND
NY:NIAGARA FALLS	9	0.5	0.2	0.3	0.02	0.01	0.02	32.6	0.11	ND
OH:COLUMBUS	7	0.8	<0.1	0.2	0.03	0.01	0.02	72.5	0.04	ND
OK:OKLAHOMA CITY	16	3.1	<0.1	1.8	0.04	0.01	0.02	NS		
OR:PORTLAND	7	NM	NM	NM	0.01	<0.01	0.01	NS		
PA:HARRISBURG	13	2.0	0.1	0.8	0.04	0.01	0.02	36.3	0.12	ND
PA:PITTSBURGH	9	0.3	<0.1	0.1	0.03	0.01	0.02	NS		
SC:BARNWELL	2	0.1	0.1	0.1	0.02	0.02	0.02	37.5	0.13	ND
SC:COLUMBIA	9	1.0	0.2	0.5	0.05	0.01	0.02	126.3	0.73	ND
TN:KNOXVILLE	5	3.0	0.6	1.6	0.03	0.02	0.03	NS		
VA:LYNCHGURG	8	1.3	0.1	0.7	0.04	0.01	0.02	NS		
VA:VIRGINIA BEACH	6	0.3	0.1	0.1	0.02	0.01	0.02	38.8	0.20	ND
WV:CHARLESTON	8	0.7	0.2	0.3	0.02	0.01	0.01	107.8	0.25	ND

MINIMUM DETECTABLE LIMIT FOR FIELD ESTIMATES - .1 pCi/m^3
MINIMUM DETECTABLE LIMIT FOR LAB MEASUREMENT - .01 pCi/m^3

ND	NO GAMMA ACTIVITY DETECTABLE
NS	NO SAMPLE
NM	NO MEASUREMENT

TABLE 4

AIRBORNE PARTICULATES AND PRECIPITATION
GROSS BETA CONCENTRATION
SEPTEMBER 1980

		AIRBORNE PARTICULATES						PRECIPITATION		
		5-HR FIELD ESTIMATE			EERF LAB MEASUREMENT					
LOCATION	# SAM	MAX	MIN	AVG	MAX	MIN	AVG	DEPTH	ACT.	SPECIFIC GAMMA ACT.
		(pCi/m^3)			(pCi/m^3)			(mm)	(nCi/m^2)	(pCi/1)
AL:MONTGOMERY	9	0.6	0.1	0.3	0.02	0.01	0.01	45.0	0.09	ND
CA:BERKELEY	9	0.1	<0.1	0.1	0.01	<0.01	0.01	NS		
CA:LOS ANGELES	9	0.8	0.2	0.4	0.02	0.01	0.01	NS		
CO:DENVER	9	1.4	0.3	0.7	0.02	0.01	0.01	NS		
CT:HARTFORD	9	0.3	0.1	0.2	0.01	0.01	0.01	14.8	0.06	ND
FL:MIAMI	9	NM	NM	NM	0.01	<0.01	0.01	105.8	0.11	ND
ID:IDAHO FALLS	9	NM	NM	NM	0.02	0.01	0.01	19.5	0.04	ND
IL:CHICAGO	8	0.7	0.1	0.3	0.02	0.01	0.01	65.6	0.08	ND
MI:LANSING	9	0.4	0.1	0.2	0.02	0.01	0.01	71.8	0.07	ND
ND:BISMARCK	9	1.0	0.2	0.7	0.02	0.01	0.01	49.8	0.10	ND
NJ:TRENTON	9	3.2	<0.1	1.2	0.03	0.01	0.02	47.9	0.17	ND
NM:SANTE FE	9	0.7	0.2	0.5	0.01	0.01	0.01	NS		
NV:LAS VEGAS	9	1.7	0.1	1.1	0.02	0.01	0.01	NS		
NY:NEW YORK CITY	9	0.3	0.1	0.2	0.02	0.01	0.02	21.0	0.07	ND
NY:NIAGARA FALLS	9	0.3	0.1	0.2	0.02	0.01	0.01	69.8	0.09	ND
NY:SYRACUSE	4	0.8	0.1	0.3	0.02	0.01	0.01	21.0	0.02	ND
OH:COLUMBUS	9	1.0	<0.1	0.6	0.04	<0.01	0.02	12.5	0.03	ND
OK:OKLAHOMA CITY	18	3.7	0.2	1.5	0.03	0.01	0.02	NS		
OR:PORTLAND	9	NM	NM	NM	0.01	0.01	0.01	52.6	0.11	ND
PA:HARRISBURG	12	2.3	0.3	0.9	0.02	0.01	0.02	24.1	0.02	ND
PA:PITTSBURGH	8	0.5	<0.1	0.1	0.02	0.01	0.01	48.8	0.10	ND
SC:BARNWELL	2	0.1	0.1	0.1	0.01	0.01	0.01	75.0	0.15	ND
SC:COLUMBIA	9	1.0	0.1	0.5	0.05	0.01	0.02	190.0	1.25	ND
TN:KNOXVILLE	4	0.7	<0.1	0.4	0.08	0.01	0.03	NS		
VA:LYNCHBURG	9	1.0	0.2	0.8	0.02	0.01	0.01	NS		
VA:VIRGINIA BEACH		NS						24.0	0.12	ND
WV:CHARLESTON	7	1.0	0.2	0.6	0.04	<0.01	0.01	22.5	0.03	ND

MINIMUM DETECTABLE LIMIT FOR FIELD ESTIMATES - .1 pCi/m^3
MINIMUM DETECTABLE LIMIT FOR LAB MEASUREMENT - .01 pCi/m^3

ND	NO GAMMA ACTIVITY DETECTABLE
NS	NO SAMPLE
NM	NO MEASUREMENT

TABLE 5

AIRBORNE PARTICULATES AND PRECIPITATION
GROSS BETA CONCENTRATION
OCTOBER 1980

		AIRBORNE PARTICULATES						PRECIPITATION		
		5-HR FIELD ESTIMATE			EERF LAB MEASUREMENT					
LOCATION	# SAM	MAX	MIN	AVG	MAX	MIN	AVG	DEPTH	ACT.	SPECIFIC GAMMA ACT.
		(pCi/m^3)			(pCi/m^3)			(mm)	(nCi/m^2)	(pCi/l)
AL:MONTGOMERY	17	2.4	0.2	1.0	0.03	0.01	0.02	80.0	0.10	ND
AR:LITTLE ROCK	17	1.3	<0.1	0.6	0.06	0.01	0.02	19.8	0.03	ND
CA:BERKELEY	18	1.9	0.1	0.4	0.04	0.01	0.02	NS		
CA:LOS ANGELES	19	3.9	0.2	2.0	0.07	0.01	0.03	NS		
CO:DENVER	19	4.0	<0.1	2.1	0.20	0.01	0.04	7.8	0.10	ND
CT:HARTFORD	20	0.9	0.1	0.3	0.02	0.01	0.01	30.5	0.12	ND
FL:JACKSONVILLE	13	0.9	0.1	0.2	0.03	0.01	0.02	18.6	0.02	ND
FL:MIAMI	15	0.2	<0.1	0.1	0.03	<0.01	0.01	134.6	0.13	ND
HI:HONOLULU	15	0.5	0.2	0.3	0.22	0.01	0.04	9.1	0.01	ND
ID:BOISE	20	2.7	0.2	1.3	0.07	<0.01	0.02	0.7	<0.01	ND
ID:IDAHO FALLS	20	NM	NM	NM	0.06	0.01	0.02	26.4	0.05	ND
IL:CHICAGO	17	1.9	0.2	0.8	0.04	0.01	0.02	42.0	0.11	ND
KY:FRANKFORT	15	2.0	<0.1	0.8	0.03	0.01	0.02	42.5	0.09	ND
MI:LANSING	16	1.4	0.1	0.3	0.03	0.01	0.02	39.7	0.12	ND
MS:JACKSON	17	1.4	<0.1	0.6	0.05	0.01	0.02	5.1	0.01	ND
MT:HELENA	10	2.4	<0.1	0.9	0.02	0.01	0.01	19.1	0.07	ND
ND:BISMARCK	19	2.8	0.2	1.1	0.03	0.01	0.01	58.9	0.52	ND
NJ:TRENTON	17	5.3	0.2	1.9	0.04	0.01	0.02	52.2	0.08	ND
NM:SANTA FE	20	3.3	0.5	1.6	0.15	0.01	0.04	NS		
NV:LAS VEGAS	20	4.4	0.5	2.9	0.09	0.01	0.03	0.4	0.01	ND
NY:NEW YORK CITY	16	0.6	0.1	0.3	0.03	0.01	0.02	26.2	0.05	ND
NY:NIAGARA FALLS	17	0.6	0.1	0.3	0.02	0.01	0.01	91.8	0.15	ND
NY:YAPHANK	18	4.0	<0.1	0.8	0.03	0.01	0.01	2.0	0.01	ND
OH:COLUMBUS	19	3.6	0.2	1.0	0.04	0.01	0.02	74.0	0.21	ND
OK:OKLAHOMA CITY	21	4.0	0.6	2.3	0.11	0.01	0.03	NS		
OR:PORTLAND	21	NM	NM	NM	0.04	0.01	0.01	27.7	0.06	ND
PA:HARRISBURG	18	3.0	0.1	1.1	0.02	0.01	0.02	37.5	0.14	ND
PA:PITTSBURGH	14	1.4	<0.1	0.6	0.02	0.01	0.02	7.0	0.01	ND
RI:PROVIDENCE	6	2.3	0.2	1.1	0.02	0.01	0.01	10.0	0.02	ND
SC:BARNWELL	2	0.3	<0.1	0.2	0.02	0.01	0.01	62.5	0.06	ND
SC:COLUMBIA	14	2.0	<0.1	0.9	0.06	0.01	0.03	57.5	0.11	ND
TN:KNOXVILLE	11	2.0	<0.1	0.9	0.13	0.01	0.03	NS		
VA:LYNCHBURG	16	5.0	0.1	1.7	0.04	<0.01	0.02	NS		
VA:VIRGINIA BEACH	16	0.3	<0.1	0.2	0.05	0.01	0.02	131.0	0.45	ND
WI:MADISON	15	1.4	0.1	0.5	0.07	0.01	0.02	10.0	0.01	ND
WV:CHARLESTON	19	3.4	0.4	1.5	0.03	0.01	0.02	25.0	0.09	ND

MINIMUM DETECTABLE LIMIT FOR FIELD ESTIMATES - .1 pCi/m^3
MINIMUM DETECTABLE LIMIT FOR LAB MEASUREMENT - .01 pCi/m^3

ND	NO GAMMA ACTIVITY DETECTABLE
NS	NO SAMPLE
NM	NO MEASUREMENT

TABLE 6

AIRBORNE PARTICULATES AND PRECIPITATION
GROSS BETA CONCENTRATION
NOVEMBER 1980

		AIRBORNE PARTICULATES						PRECIPITATION		
		5-HR FIELD ESTIMATE			EERF LAB MEASUREMENT					
LOCATION	# SAM	MAX	MIN	AVG	MAX	MIN	AVG	DEPTH	ACT.	SPECIFIC GAMMA ACT.
		(pCi/m^3)			(pCi/m^3)			(mm)	(nCi/m^2)	(pCi/l)
AL:MONTGOMERY	13	2.4	0.2	1.3	0.08	0.02	0.04	NS		
CA:BERKELEY	13	1.4	0.1	0.4	0.10	0.02	0.05	NS		
CA:LOS ANGELES	11	3.6	0.5	1.5	0.22	0.05	0.10	NS		
CO:DENVER	11	2.7	0.3	1.2	0.18	0.02	0.06	NS		
CT:HARTFORD	11	0.4	0.1	0.2	0.03	0.01	0.02	32.7	0.36	ND
FL:JACKSONVILLE	11	1.4	0.2	0.5	0.11	0.03	0.05	47.4	0.10	ND
FL:MIAMI	13	0.3	<0.1	0.1	0.15	0.01	0.06	149.0	0.30	ND
ID:BOISE	11	2.4	0.1	1.2	0.18	0.02	0.07	14.5	0.09	ND
ID:IDAHO FALLS	11	NM	NM	NM	0.12	<0.01	0.07	NS		
IL:CHICAGO	13	5.2	0.2	1.7	0.11	0.02	0.04	10.9	0.07	ND
MI:LANSING	11	0.9	0.1	0.4	0.05	0.02	0.03	17.9	0.17	ND
MS:JACKSON	8	1.4	0.1	0.6	0.13	0.04	0.08	15.2	0.15	ND
MT:HELENA	9	2.2	0.2	0.8	0.06	0.03	0.04	10.1	0.04	ND
ND:BISMARCK	12	5.5	0.3	2.1	0.08	0.02	0.04	4.7	0.21	ND
NJ:TRENTON	13	6.4	0.3	1.5	0.08	0.02	0.04	38.1	0.20	ND
NM:SANTA FE	10	1.9	0.2	0.9	0.10	0.02	0.06	NS		
NV:LAS VEGAS	13	5.4	1.0	2.7	0.14	0.03	0.07	NS		
NY:ALBANY	3	0.4	0.2	0.3	0.03	0.01	0.02	NS		
NY:NEW YORK CITY	9	0.4	0.1	0.2	0.04	0.02	0.03	42.3	0.13	ND
NY:NIAGARA FALLS	12	0.5	0.1	0.3	0.06	0.01	0.03	35.9	0.18	ND
NY:YAPHANK	12	2.5	<0.1	0.5	0.04	0.02	0.03	NS		
OH:COLUMBUS	7	0.7	0.1	0.3	0.06	0.03	0.04	35.8	0.25	ND
OH:PAINESVILLE	11	1.0	0.1	0.5	0.05	0.02	0.03	13.8	0.10	ND
OK:OKLAHOMA CITY	9	4.2	1.3	2.3	0.12	0.02	0.09	NS		
OR:PORTLAND	18	0.6	<0.1	0.1	0.05	0.01	0.03	319.7	1.30	ND
PA:HARRISBURG	13	1.8	0.1	0.6	0.05	0.02	0.03	56.0	0.28	ND
PA:PITTSBURGH	10	0.8	<0.1	0.4	0.06	0.02	0.03	35.0	1.02	ND
SC:BARNWELL	2	0.1	<0.1	0.1	0.05	0.02	0.04	22.5	0.05	ND
SC:COLUMBIA	10	3.1	0.2	1.0	0.10	0.03	0.06	63.8	0.47	ND
TN:KNOXVILLE	8	3.6	<0.1	0.9	0.09	0.04	0.06	NS		
VA:LYNCHBURG	9	2.0	<0.1	0.9	0.30	0.03	0.11	100.0	1.16	ND
VA:VIRGINIA BEACH	7	0.4	0.1	0.2	0.07	0.02	0.03	62.5	0.45	ND
WV:CHARLESTON	9	3.1	<0.1	1.5	0.22	0.02	0.06	27.5	0.37	ND

MINIMUM DETECTABLE LIMIT FOR FIELD ESTIMATES - .1 pCi/m^3
MINIMUM DETECTABLE LIMIT FOR LAB MEASUREMENT - .01 pCi/m^3

ND NO GAMMA ACTIVITY DETECTABLE
NS NO SAMPLE
NM NO MEASUREMENT

TABLE 7

AIRBORNE PARTICULATES AND PRECIPITATION
GROSS BETA CONCENTRATION
DECEMBER 1980

		AIRBORNE PARTICULATES						PRECIPITATION		
		5-HR FIELD ESTIMATE			EERF LAB MEASUREMENT					
LOCATION	# SAM	MAX	MIN	AVG	MAX	MIN	AVG	DEPTH	ACT.	SPECIFIC GAMMA ACT.
		(pCi/m^3)			(pCi/m^3)			(mm)	(nCi/m^2)	(pCi/l)
AL:MONTGOMERY	8	1.7	0.3	0.7	0.10	0.01	0.06	67.5	0.55	ND
CA:BERKELEY	9	0.5	0.1	0.2	0.14	0.05	0.09	10.6	0.04	ND
CA:LOS ANGELES	9	1.5	0.4	0.9	0.24	0.07	0.14	9.0	0.04	ZR-NB 7.05 ± 93.7%
CO:DENVER	1	1.0	1.0	1.0	0.03	0.01	0.01	3.5	0.03	ND
CT:HARTFORD	9	0.2	0.1	0.1	0.06	0.03	0.04	24.3	0.38	ND
FL:JACKSONVILLE	7	1.1	0.2	0.4	0.11	0.03	0.08	7.9	0.03	ND
FL:MIAMI	10	0.4	0.1	0.2	0.18	0.03	0.09	4.0	0.02	ND
ID:BOISE	9	0.4	<0.1	0.2	0.08	0.04	0.06	41.3	0.62	ND
ID:IDAHO FALLS	9	NM	NM	NM	0.14	0.06	0.10	21.5	0.17	^{106}RU 69.49 ± 63.6% ZR-NB 7.20 ± 93.2%
IL:CHICAGO	8	0.9	0.1	0.4	0.07	0.04	0.05	51.3	0.44	ND
MI:LANSING	9	0.2	0.1	0.1	0.05	0.02	0.04	53.6	0.17	ND
MT:HELENA	8	0.6	0.1	0.3	0.11	0.04	0.06	14.8	0.15	ND
ND:BISMARCK	8	1.7	0.3	0.7	0.14	0.03	0.06	7.2	0.28	ND
NJ:TRENTON	9	0.9	0.1	0.3	0.07	0.04	0.05	8.1	0.06	ND
NV:SANTA FE	9	1.4	0.0	0.6	0.12	0.03	0.08	NS		
NV:LAS VEGAS	10	3.3	0.8	1.9	0.22	0.06	0.12	NS		
NY:NEW YORK CITY	9	0.2	0.1	0.1	0.08	0.03	0.06	13.8	0.19	ND
NY:NIAGARA FALLS	8	0.1	<0.1	0.1	0.07	0.04	0.05	4.5	0.02	ND
OH:COLUMBUS	9	0.7	0.1	0.2	0.12	0.05	0.07	17.5	0.12	ND
OH:PAINESVILLE	9	0.2	0.1	0.2	0.07	0.04	0.05	59.4	0.74	ND
OK:OKLAHOMA CITY	14	4.2	0.4	1.9	0.21	0.03	0.08	NS		
OR:PORTLAND	9	0.1	<0.1	<0.1	0.06	0.01	0.04	165.0	2.48	^{106}RU 52.66 ± 74.4% ZR-NB 8.31 ± 80.5%
PA:HARRISBURG	14	0.9	0.1	0.4	0.07	0.03	0.05	17.0	0.11	ND
PA:PITTSBURGH	7	0.3	0.0	0.2	0.09	0.03	0.04	NS		
SC:COLUMBIA	8	1.3	0.3	0.8	0.11	0.04	0.07	37.5	0.19	ND
VA:VIRGINIA BEACH	2	0.3	<0.1	0.2	0.08	0.06	0.07	53.8	1.13	ND
WV:CHARLESTON	5	0.8	<0.1	0.5	0.08	0.05	0.07	35.0	0.50	ND

MINIMUM DETECTABLE LIMIT FOR FIELD ESTIMATES - .1 pCi/m^3
MINIMUM DETECTABLE LIMIT FOR LAB MEASUREMENT - .01 pCi/m^3

ND	NO GAMMA ACTIVITY DETECTABLE
NS	NO SAMPLE
NM	NO MEASUREMENT

TABLE 8

PRECIPITATION
TRITIUM CONCENTRATION

JULY - SEPTEMBER 1980

LOCATION	JULY nCi/l ± 2s	AUGUST nCi/l ± 2s	SEPTEMBER nCi/l ± 2s
AL:MONTGOMERY	0.7 0.2	NS	0.5 0.2
CO:DENVER	0.6 0.2	NS	NS
CT:HARTFORD	NS	NS	0.4 0.2
FL:MIAMI	0.4 0.2	0.3 0.2	0.4 0.2
ID:IDAHO FALLS	NS	0.6 0.2	0.5 0.2
IL:CHICAGO	0.7 0.2	0.3 0.2	0.3 0.2
MI:LANSING	NS	0.4 0.2	0.5 0.2
ND:BISMARCK	0.7 0.2	0.5 0.2	0.5 0.2
NJ:TRENTON	0.4 0.2	0.4 0.2	0.3 0.2
NV:LAS VEGAS	1.0 0.2	NS	NS
NY:NEW YORK CITY	0.6 0.2	0.6 0.2	0.4 0.2
NY:NIAGARA FALLS	0.5 0.2	0.3 0.2	0.4 0.2
NY:SYRACUSE	NS	NS	0.2 0.2
OH:COLUMBUS	0.7 0.2	0.4 0.2	0.4 0.2
OR:PORTLAND	NS	NS	0.3 0.2
PA:HARRISBURG	0.6 0.2	0.4 0.2	0.3 0.2
PA:PITTSBURGH	0.3 0.2	NS	0.5 0.2
SC:BARNWELL	1.7 0.2	0.7 0.2	0.9 0.2
SC:COLUMBIA	0.4 0.2	0.4 0.2	1.8 0.3
VA:LYNCHBURG	0.5 0.2	NS	NS
VA:VIRGINIA BEACH	0.4 0.2	0.3 0.2	0.4 0.2
WV:CHARLESTON	0.4 0.2	0.3 0.2	0.2 0.2

NS	NO SAMPLE
s	SIGMA COUNTING ERROR

TABLE 9

PRECIPITATION
TRITIUM CONCENTRATION

OCTOBER - DECEMBER 1980

LOCATION	OCTOBER nCi/l ± 2s	NOVEMBER nCi/l ± 2s	DECEMBER nCi/l ± 2s
AL:MONTGOMERY	0.3 0.2	NS	0.2 0.2
AR:LITTLE ROCK	0.3 0.2	NS	NS
CA:BERKELEY	NS	NS	0.3 0.2
CA:LOS ANGELES	NS	NS	0.3 0.2
CO:DENVER	0.3 0.2	NS	0.3 0.2
CT:HARTFORD	0.3 0.2	0.3 0.2	0.3 0.2
FL:JACKSONVILLE	0.1 0.2	0.4 0.2	0.4 0.2
FL:MIAMI	0.2 0.2	0.4 0.2	0.3 0.2
HI:HONOLULU	0.3 0.2	NS	NS
ID:BOISE	0.3 0.2	0.2 0.2	0.2 0.2
ID:IDAHO FALLS	0.3 0.2	NS	0.3 0.2
IL:CHICAGO	0.4 0.2	0.4 0.2	0.2 0.2
KY:FRANKFORT	0.2 0.2	NS	NS
MI:LANSING	0.2 0.2	0.4 0.2	0.3 0.2
MS:JACKSON	0.2 0.2	0.5 0.2	NS
MT:HELENA	0.3 0.2	0.3 0.2	0.3 0.2
ND:BISMARCK	0.2 0.2	0.3 0.2	0.3 0.2
NJ:TRENTON	0.2 0.2	0.3 0.2	0.4 0.2
NV:LAS VEGAS	0.3 0.2	NS	NS
NY:NEW YORK CITY	0.3 0.2	0.5 0.2	0.5 0.2
NY:NIAGARA FALLS	0.4 0.2	0.4 0.2	0.5 0.2
NY:YAPHANK	0.2 0.2	NS	NS
OH:COLUMBUS	0.2 0.2	0.4 0.2	0.1 0.2
OH:PAINESVILLE	NS	0.2 0.2	0.3 0.2
OR:PORTLAND	0.1 0.2	0.2 0.2	0.3 0.2
PA:HARRISBURG	0.4 0.2	0.2 0.2	0.3 0.2
PA:PITTSBURGH	0.4 0.2	0.2 0.2	NS
RI:PROVIDENCE	0.2 0.2	NS	NS
SC:BARNWELL	0.4 0.2	2.2 0.3	NS
SC:COLUMBIA	0.2 0.2	0.5 0.2	0.3 0.2
VA:LYNCHBURG	NS	0.1 0.2	NS
VA:VIRGINIA BEACH	0.3 0.2	0.2 0.2	0.5 0.2
WI:MADISON	0.2 0.2	NS	NS
WV:CHARLESTON	0.3 0.2	0.5 0.2	0.5 0.2

NS NO SAMPLE
s SIGMA COUNTING ERROR

Plutonium and Uranium in Airborne Particulates

Environmental radiation levels of plutonium and uranium are determined by the analyses of quarterly composite samples (air filters) collected from the continuously operating airborne particulate samplers. The number of continuously operating stations is being increased from the original 22 and will eventually number 65 when all equipment is operational.

Analyses of the composited filters consist of ashing, separating by liquid ion exchange, and coprecipitation of the plutonium or uranium.

Concentration of the specific isotopes of plutonium-238, -239, and uranium-234, -235, and -238 are determined by alpha spectroscopy. The volume of air analyzed normally ranges from 25,000 to 40,000 m^3 for each quarterly composite.

Plutonium and uranium in airborne particulates data for April 1980 - September 1980 are shown for the 44 stations operating during this period in Tables 10 - 11.

Plutonium and uranium in precipitation for July - December 1980 will be included in the next ERD report.

TABLE 10

PLUTONIUM AND URANIUM IN AIRBORNE PARTICULATES
APRIL - JUNE 1980 COMPOSITES

	^{238}Pu		^{239}Pu		$^{239}\text{Pu}/^{238}\text{Pu}$		^{234}U		^{235}U		^{238}U	
LOCATION	aCi/m^3	± e	aCi/m^3	± e	RATIO	± e	aCi/m^3	± e	aCi/m^3	± e	aCi/m^3	± e
AL:MONTGOMERY	0.6	0.8	7.0	1.5	11.4	14.3	19.7	4.7	1.8	1.2	17.0	4.2
AR:LITTLE ROCK	2.4	1.2	9.3	2.0	3.9	2.1	34.1	5.2	2.8	1.2	34.7	5.3
CA:BERKELEY	0.6	0.8	4.5	1.2	7.2	9.4	7.8	1.7	0.8	0.5	8.4	1.8
CA:LOS ANGELES	4.2	2.1	9.4	2.4	2.2	1.2	42.4	7.7	3.0	1.7	31.0	6.3
CO:DENVER	3.6	1.9	13.1	2.9	3.6	2.1	56.7	7.8	6.2	1.9	51.3	7.3
CT:HARTFORD	0.4	0.7	7.2	1.6	16.7	28.6	16.2	2.9	1.3	0.7	13.7	2.6
DC:WASHINGTON	1.4	1.4	7.3	1.9	5.3	5.7	26.5	4.5	1.4	0.9	28.7	4.8
FL:JACKSONVILLE	4.9	2.3	17.6	4.4	3.6	1.9	26.9	5.4	2.0	1.2	26.8	5.3
FL:MIAMI	-0.2	1.0	8.3	2.4	-44.7	237.3	23.9	3.3	2.0	0.8	22.0	3.2
IA:IOWA CITY	3.4	3.0	9.6	3.6	2.8	2.7	29.0	7.4	4.0	2.5	39.3	8.9
ID:BOISE	2.5	1.8	8.1	2.2	3.2	2.4	46.1	6.5	5.2	1.7	40.5	6.0
ID:IDAHO FALLS	2.4	1.9	12.1	2.9	5.1	4.2	57.1	7.9	4.5	1.7	59.2	8.1
IL:CHICAGO	0.8	1.5	7.5	2.1	9.4	17.9	38.2	7.0	3.7	1.9	34.7	6.6
IN:INDIANAPOLIS	0.9	1.4	7.1	1.9	7.9	12.3	38.6	5.5	2.6	1.1	43.6	5.9
KS:TOPEKA	1.2	1.6	10.1	2.8	8.6	12.3	27.0	4.3	1.9	1.0	26.7	4.3
KY:FRANKFORT	1.5	1.0	15.3	2.8	10.5	7.5	29.7	4.5	1.9	0.9	28.4	4.4
MA:LAWRENCE	2.0	1.3	8.8	2.2	4.5	3.1	31.3	4.8	5.2	1.6	26.7	4.3
ME:AUGUSTA	1.7	1.1	6.4	1.6	3.8	2.6	24.6	3.5	1.6	0.7	24.6	3.5
MI:LANSING	0.3	1.1	7.3	1.8	23.6	84.4	34.8	5.3	2.4	1.1	38.0	5.7
MN:MINN/ST. PAUL	2.4	1.9	13.1	3.1	5.4	4.4	35.8	6.8	3.9	1.9	39.0	7.2
MO:JEFFERSON CITY	2.4	1.7	7.4	2.1	3.1	2.4	32.0	7.7	0.7	1.0	27.5	7.0
MS:JACKSON	1.3	1.1	8.2	1.8	6.5	5.6	29.4	4.3	2.1	0.9	30.0	4.4
NC:CHARLOTTE	1.1	0.9	12.1	2.3	10.7	8.5	28.8	4.2	1.8	0.8	26.6	4.0
NC:WILMINGTON	0.5	0.5	2.1	0.6	3.8	3.6	15.2	2.0	0.7	0.3	15.4	2.0
ND:BISMARCK	1.4	2.1	11.3	3.3	8.0	12.4	71.9	10.6	4.5	2.0	68.9	10.2
NH:CONCORD	2.5	1.1	7.1	1.5	2.9	1.4	18.9	3.0	3.0	1.0	19.9	3.1
NJ:TRENTON	8.8	2.8	16.3	3.5	1.9	0.7	32.2	5.2	3.7	1.5	32.9	5.3
NM:SANTA FE	1.4	1.6	11.8	2.8	8.2	9.2	38.1	5.4	2.5	1.1	39.2	5.5
NV:LAS VEGAS	9.4	4.3	16.1	4.4	1.7	0.9	139.3	17.3	11.4	3.6	95.3	13.1
NY:NEW YORK CITY	2.0	2.0	8.9	2.5	4.5	4.8	42.0	9.8	2.8	2.2	27.4	7.5
NY:NIAGARA FALLS	4.4	2.6	12.2	3.2	2.8	1.8	80.7	11.2	5.5	2.2	76.3	10.8
NY:SYRACUSE	1.8	1.8	11.1	2.8	6.1	6.4	36.1	5.7	1.9	1.1	39.2	6.0
OH:COLUMBUS	5.4	3.4	14.9	4.2	2.8	1.9	57.0	9.0	9.4	3.1	59.5	9.2
OH:PAINESVILLE	0.8	1.7	7.6	2.2	9.3	19.1	74.3	12.8	8.5	3.4	66.7	11.8
OK:OKLAHOMA CITY	5.3	2.5	11.3	2.8	2.1	1.1	45.5	7.7	6.0	2.3	38.4	6.9
OR:PORTLAND	-1.1	3.2	6.0	2.9	-5.2	14.9	63.0	12.9	2.5	2.2	59.1	12.4
PA:HARRISBURG	0.4	0.8	9.0	1.8	23.5	47.1	20.7	3.0	2.9	0.9	21.4	3.1
PA:PITTSBURGH	1.5	1.6	10.4	2.6	6.7	7.1	59.2	8.1	12.9	3.0	64.2	8.6
RI:PROVIDENCE	1.2	1.6	16.6	3.5	14.2	19.5	30.4	5.9	4.5	2.0	28.5	5.7

TABLE 10 (CONTINUED)

PLUTONIUM AND URANIUM IN AIRBORNE PARTICULATES
APRIL - JUNE 1980 COMPOSITES

	^{238}Pu		^{239}Pu		^{239}Pu/^{238}Pu		^{234}U		^{235}U		^{238}U	
LOCATION	aCi/m^3	±e	aCi/m^3	± e	RATIO	± e	aCi/m^3	± e	aCi/m^3	± e	aCi/m^3	± e
SC:BARNWELL	1.8	1.9	10.3	2.7	5.7	6.2	27.1	4.9	5.6	2.0	24.7	4.6
SC:COLUMBIA	1.3	1.4	11.3	2.5	9.0	10.6	54.3	7.3	4.9	1.7	60.6	8.0
TN:KNOXVILLE	3.7	2.4	11.1	3.1	3.0	2.1	49.4	7.7	4.5	1.9	37.1	6.3
TX:AUSTIN	3.0	1.4	9.4	2.0	3.2	1.6	18.8	3.0	1.8	0.8	16.1	2.7
TX:EL PASO	5.8	4.2	13.1	4.0	2.3	1.8	96.7	13.9	9.2	3.5	94.9	13.7
UT:SALT LAKE CITY	6.2	3.1	12.0	3.3	1.9	1.1	50.9	8.2	3.0	1.7	39.2	6.9
VA:LYNCHBURG	1.2	0.9	8.0	1.7	6.8	5.3	187.8	21.6	8.6	2.1	18.3	3.4
VA:VIRGINIA BEACH	0.6	1.0	11.4	2.4	17.6	28.5	41.5	7.1	1.9	1.2	38.5	6.8
WA:SEATTLE	1.6	1.2	4.2	1.3	2.5	2.0	11.2	2.9	2.1	1.2	13.2	3.2
WA:SPOKANE	0.9	2.1	7.7	2.5	8.3	19.0	62.7	10.1	5.1	2.4	62.2	10.1
WV:CHARLESTON	1.3	1.2	11.8	2.5	9.4	9.0	39.5	7.1	3.6	1.7	37.8	6.9
WY:CHEYENNE	-0.3	1.5	12.8	3.5	-48.0	264.6	34.9	5.2	2.8	1.2	39.4	5.7

PLUTONIUM RATIOS ARE CALCULATED ON UNROUNDED RAW VALUES.

THE ^{238}Pu AND ^{239}Pu CONCENTRATIONS REPORTED IN THIS TABLE HAVE BEEN ROUNDED.

e 2 SIGMA COUNTING ERROR

TABLE 11

PLUTONIUM AND URANIUM IN AIRBORNE PARTICULATES
JULY - SEPTEMBER 1980 COMPOSITES

	^{238}Pu		^{239}Pu		^{239}Pu/^{238}Pu		^{234}U		^{235}U		^{238}U	
LOCATION	aCi/m^3	± e	aCi/m^3	± e	RATIO	± e	aCi/m^3	± e	aCi/m^3	± e	aCi/m^3	± e
AL:MONTGOMERY	1.3	0.8	3.3	0.9	2.7	1.9	14.9	3.2	1.3	0.8	15.1	3.2
AR:LITTLE ROCK	4.3	2.3	3.5	1.5	0.8	0.6	38.5	6.9	2.3	1.4	40.0	7.1
AZ:PHOENIX	8.1	3.8	4.0	2.6	0.5	0.4	183.0	29.5	18.9	7.6	184.5	29.7
CA:BERKELEY	4.7	2.4	4.1	2.3	0.9	0.7	15.4	2.9	1.6	0.8	10.8	2.3
CA:LOS ANGELES	11.6	2.3	3.9	1.1	0.3	0.1	32.5	4.0	1.5	0.6	31.9	3.9
CO:DENVER	0.6	0.8	5.0	1.3	7.8	9.6	49.3	7.5	3.3	1.3	43.8	6.8
CT:HARTFORD	0.7	0.8	4.3	1.2	5.9	6.8	17.3	3.0	1.4	0.7	14.6	2.7
DC:WASHINGTON	2.9	1.7	5.6	1.7	1.9	1.3	21.5	5.1	1.6	1.2	14.3	4.0
FL:JACKSONVILLE	1.0	1.0	4.6	1.3	4.6	4.8	25.3	4.3	2.9	1.2	27.5	4.5
FL:MIAMI	1.8	1.1	2.2	0.8	1.2	0.9	22.8	3.7	2.4	1.0	23.7	3.8
IA:IOWA CITY	11.6	6.4	9.9	5.2	0.9	0.7	26.3	3.5	2.4	0.8	21.9	3.1
ID:BOISE	1.7	0.9	4.5	1.5	2.7	1.7	52.0	7.5	7.7	2.4	40.4	6.3
ID:IDAHO FALLS	3.6	1.6	5.1	1.9	1.4	0.8	49.8	6.2	4.7	1.4	46.6	5.9
IL:CHICAGO	9.7	4.2	8.8	3.6	0.9	0.5	30.2	3.6	2.5	0.8	27.7	3.4
IN:INDIANAPOLIS	2.7	1.1	3.4	1.3	1.3	0.7	38.7	4.7	3.5	1.0	34.2	4.3
KS:TOPEKA	0.5	1.0	1.9	0.8	3.7	7.3	20.4	3.4	1.2	0.7	20.4	3.4
KY:FRANKFORT	2.8	1.3	5.8	1.6	2.1	1.1	19.2	4.5	1.5	1.1	15.8	3.9
MA:LAWRENCE	2.2	1.2	6.1	1.5	2.7	1.6	22.8	3.8	1.5	0.8	26.9	4.3
ME:AUGUSTA	1.3	0.9	3.8	1.1	2.9	2.1	14.4	2.7	1.5	0.8	13.8	2.6
MI:LANSING	1.2	1.2	4.6	1.6	4.0	4.4	22.4	3.5	0.5	0.4	19.6	3.2
MN:MINN/ST. PAUL	1.5	1.2	5.0	1.5	3.2	2.6	22.6	3.1	1.3	0.6	25.1	3.3
MO:JEFFERSON CITY	0.9	0.8	4.2	1.1	4.7	4.2	28.2	4.4	1.9	0.9	29.8	4.6
MS:JACKSON	6.1	2.6	6.7	2.1	1.1	0.6	25.5	4.5	1.2	0.8	24.7	4.4
NC:CHARLOTTE	4.9	1.6	4.3	1.2	0.9	0.4	34.2	6.2	1.4	1.0	35.9	6.4
NC:WILMINGTON	1.7	0.8	1.3	0.5	0.7	0.5	7.3	1.7	0.4	0.4	5.7	1.5
ND:BISMARCK	-0.1	1.2	6.2	1.8	-51.8	512.4	39.2	6.0	3.1	1.4	33.2	5.4
NH:CONCORD	1.2	0.9	4.1	1.1	3.5	2.8	19.5	3.2	1.1	0.6	16.1	2.8
NJ:TRENTON	4.9	2.0	8.9	2.2	1.8	0.9	27.4	5.5	3.2	1.7	25.9	5.3
NM:SANTA FE	1.3	0.9	3.9	1.1	3.0	2.2	35.1	5.0	2.2	0.9	32.3	4.7
NV:LAS VEGAS	NA				NA		144.1	26.1	5.7	4.1	96.5	19.9
NY:NEW YORK CITY	1.1	0.9	5.5	1.4	5.1	4.6	23.4	3.7	2.8	1.1	25.4	4.0
NY:NIAGARA FALLS	0.8	1.0	6.4	1.6	7.5	8.8	51.6	7.0	2.3	1.0	47.4	6.5
NY:SYRACUSE	5.9	3.0	2.9	1.4	0.5	0.3	28.9	6.1	1.8	1.3	30.1	6.2
NY:YAPHANK	0.7	1.4	2.0	1.0	3.0	6.4	12.0	2.9	2.1	1.1	13.3	3.0
OH:COLUMBUS	3.4	1.3	4.6	1.6	1.4	0.7	54.8	6.6	3.8	1.3	52.5	6.4
OH:TOLEDO	6.7	3.2	6.4	3.1	0.9	0.6	7.8	1.0	0.5	0.2	7.5	0.9
OK:OKLAHOMA CITY	2.3	1.9	4.4	1.6	1.9	1.7	56.6	8.4	2.2	1.3	43.8	7.0
OR:PORTLAND	1.9	1.0	2.2	1.1	1.2	0.8	34.7	5.8	2.3	1.2	28.4	5.1
PA:HARRISBURG	1.2	1.3	6.0	2.0	5.2	5.9	17.1	3.2	2.1	1.0	18.0	3.3
PA:PITTSBURGH	3.2	1.8	2.8	1.2	0.9	0.6	36.4	5.5	5.2	1.7	44.9	6.4
RI:PROVIDENCE	2.1	1.0	5.9	1.4	2.8	1.5	16.7	3.7	2.3	1.2	16.3	3.7

TABLE 11 (CONTINUED)

PLUTONIUM AND URANIUM IN AIRBORNE PARTICULATES
JULY - SEPTEMBER 1980 COMPOSITES

	^{238}Pu		^{239}Pu		^{239}Pu/^{238}Pu		^{234}U		^{235}U		^{238}U	
LOCATION	aCi/m^3	$\pm$e	aCi/m^3	$\pm$ e	RATIO	$\pm$ e	aCi/m^3	$\pm$ e	aCi/m^3	$\pm$ e	aCi/m^3	$\pm$ e
SC:BARNWELL	5.7	2.6	6.0	2.7	1.0	0.7	53.7	9.9	2.8	2.0	52.7	9.8
SC:COLUMBIA	2.5	1.1	5.4	1.3	2.2	1.1	43.3	6.1	1.9	0.9	43.7	6.1
TN:KNOXVILLE	2.2	1.6	5.9	1.8	2.6	2.0	37.5	5.6	2.3	1.1	30.7	4.8
TX:AUSTIN	3.0	1.6	4.4	1.4	1.4	0.9	22.5	3.9	1.1	0.7	20.7	3.7
TX:EL PASO	3.7	2.9	5.0	2.1	1.3	1.2	81.0	12.8	4.2	2.3	74.7	12.1
UT:SALT LAKE CITY	1.1	0.6	5.4	1.4	5.1	3.1	57.6	6.6	3.5	1.1	55.5	6.4
VA:LYNCHBURG	1.7	0.9	6.3	1.4	3.6	2.1	96.7	12.6	5.1	1.7	11.4	2.7
VA:VIRGINIA BEACH	3.7	1.8	4.8	1.5	1.3	0.7	54.7	8.4	2.7	1.4	47.9	7.6
WA:SEATTLE	1.0	0.5	1.7	0.6	1.7	1.0	11.6	2.1	0.9	0.5	11.3	2.1
WA:SPOKANE	NA				NA		65.9	14.7	2.5	2.5	70.9	15.4
WV:CHARLESTON	7.6	1.8	4.1	1.1	0.5	0.2	24.6	4.4	1.3	0.8	22.4	4.1
WY:CHEYENNE	2.4	1.4	12.2	3.5	5.0	3.3	75.6	10.8	6.3	2.6	73.4	10.6

PLUTONIUM RATIOS ARE CALCULATED ON UNROUNDED RAW VALUES.

THE ^{238}Pu AND ^{239}Pu CONCENTRATIONS REPORTED IN THIS TABLE HAVE BEEN ROUNDED.

NA	NOT AVAILABLE
e	2 SIGMA COUNTING ERROR

Krypton-85

Krypton-85 is a long-lived noble gas with a half life of 10.8 years. It is released into the atmosphere by nuclear reactor operations, fuel fabrication, fuel reprocessing, and nuclear detonations. Krypton-85 also occurs naturally in minor quantities primarily from the neutron capture of stable krypton-84 as well as spontaneous fission and neutron-induced fission of uranium. Monitoring of krypton-85 in the atmosphere has been conducted to identify and establish baseline levels and long-term trends.

Krypton-85 analysis began in January 1973 with sample collections and analyses being performed for 12 sampling locations. These locations were selected to provide atmospheric coverage of the United States with considerations being given to the proximity to fuel reprocessing plants, nuclear reactors, and wide geographic coverage.

Dry compressed air samples, collected at each location, are purchased from commercial air suppliers semiannually and shipped to the EERF where the krypton-85 is cryogenically separated and counted in a liquid scintillation system.

Data for January - June 1976 were reported in ERD 8.

Note. -- The recovery tracer required for the analysis of these samples is currently unavailable. When the tracer is available or new methodology developed, the samples received after June 1976 will be analyzed and reported in this report series.

ERAMS

SECTION II. Water Program

The ERAMS water program provides ambient radiation data to assess the effects of the nuclear power industry, the natural radiation environment, and other nuclear sources on the nation's rivers, streams and drinking water supplies.

Surface Water

Grab samples are taken quarterly at 58 stations located downstream from operating or future nuclear facilities.

Surface water monitoring consists of tritium analyses quarterly and gamma scans annually. Tritium is the primary radioactive pollutant from nuclear power plants, therefore, all nuclear power plants that are operating or scheduled for operation through 1980 are being monitored.

Tritium concentrations are determined by liquid scintillation counting of distilled samples. Gamma scans are performed annually to determine if there is a buildup of other contaminants.

Tritium concentrations for surface water samples for July - December 1980 are given in Tables 12 - 13.

TABLE 12

SURFACE WATER
TRITIUM CONCENTRATION

JULY - SEPTEMBER 1980

LOCATION	SOURCE	DATE COLLECTED	nCi/l	± e
AL:DOTHAN	CHATTAHOOCHIE RIVER	7/15/80	0.3	0.2
AL:SCOTTSBORO	TENNESSEE RIVER	7/ 7/80	0.6	0.2
AR:LITTLE ROCK	ARKANSAS RIVER	7/ 8/80	0.2	0.2
CA:CLAY STATION	FOLSOM S. CANAL	7/ 7/80	0.2	0.2
CA:CLAY STATION	FOLSOM S. CANAL	7/ 7/80	0.4	0.2
CA:DIABLO CANYON	PACIFIC OCEAN	7/14/80	0.2	0.2
CA:EUREKA	HUMBOLDT BAY	7/ 7/80	0.3	0.2
CA:SAN ONOFRE	PACIFIC OCEAN	7/31/80	0.4	0.2
CO:GREELEY	SOUTH PLATTE RIVER	7/23/80	0.5	0.2
CT:EAST HADDAM	CONNECTICUT RIVER	7/29/80	0.6	0.2
CT:WATERFORD	LONG ISLAND SOUND	7/29/80	0.5	0.2
FL:CRYSTAL RIVER	GULF OF MEXICO	7/ 7/80	0.3	0.2
FL:FT. PIERCE	ATLANTIC OCEAN	7/ 8/80	0.2	0.2
FL:HOMESTEAD	BISCAYNE BAY	7/31/80	0.6	0.2
IA:CEDAR RAPIDS	CEDAR RIVER	7/ 1/80	0.4	0.2
IA:CEDAR RAPIDS	CEDAR RIVER	9/30/80	0.5	0.2
ID:BUHL	SNAKE RIVER	7/ 7/80	0.3	0.2
IL:MOLINE	MISSISSIPPI RIVER	7/23/80	0.3	0.2
IL:MORRIS	ILLINOIS RIVER	7/ 1/80	0.4	0.2
IL:ZION	LAKE MICHIGAN	8/ 1/80	0.5	0.2
LA:NEW ORLEANS	MISSISSIPPI RIVER	7/ 3/80	0.2	0.2
MA:PLYMOUTH	CAPE CODE BAY	7/ 9/80	0.3	0.2
MA:ROWE	DEERFIELD RIVER	7/30/80	0.7	0.2
MD:CONOWINGO	SUSQUEHANNA RIVER	7/15/80	0.3	0.2
MD:LUSBY	CHESAPEAKE BAY	7/ 8/80	0.3	0.2
ME:WISCASSET	MONTSEWAY BAY	7/ 1/80	0.4	0.2
MI:BRIDGMAN	LAKE MICHIGAN	7/ 7/80	0.7	0.2
MI:CHARLEVOIX	LAKE MICHIGAN	7/ 5/80	0.5	0.2
MI:MONROE	LAKE ERIE	7/ 7/80	0.5	0.2
MI:SOUTH HAVEN	LAKE MICHIGAN	7/ 9/80	0.7	0.2
MN:MONTICELLO	MISSISSIPPI RIVER	7/29/80	0.4	0.2
MN:RED WING	MISSISSIPPI RIVER	7/15/80	0.3	0.2
MS:PORT GIBSON	MISSISSIPPI RIVER	7/ 3/80	0.3	0.2
NC:CHARLOTTE	CATAWBA RIVER	7/14/80	0.3	0.2
NC:SOUTHPORT	ATLANTIC OCEAN	7/ 1/80	0.3	0.2
NJ:BAYSIDE	DELAWARE RIVER	7/10/80	0.3	0.2
NJ:OYSTER CREEK	OYSTER CREEK	7/23/80	0.4	0.2
NV:BOULDER CITY	COLORADO RIVER	7/15/80	0.3	0.2
NY:OSWEGO	LAKE ONTARIO	7/ 1/80	0.3	0.2
NY:POUGHKEEPSIE	HUDSON RIVER	7/16/80	0.4	0.2
OH:TOLEDO	LAKE ERIE	7/ 2/80	0.4	0.2
OR:BRADWOOD	COLUMBIA RIVER	7/31/80	0.5	0.2
PA:DANVILLE	SUSQUEHANNA RIVER	7/28/80	0.5	0.2
SC:ALLENDALE	SAVANNAH RIVER	7/17/80	2.4	0.3
SC:BROAD RIVER	BROAD RIVER	7/ 9/80	0.3	0.2
SC:HARTSVILLE	LAKE ROBINSON	7/14/80	1.1	0.2
TN:DAISY	TENNESSEE RIVER	7/ 8/80	0.4	0.2
TN:KINGSTON	CLINCH RIVER	7/ 2/80	0.3	0.2
TN:KINGSTON	CLINCH RIVER	9/30/80	0.5	0.2
TX:EL PASO	RIO GRANDE	7/10/80	0.3	0.2
VA:DOSWELL	NORTH ANNA RIVER	7/14/80	1.2	0.2
VA:NEWPORT NEWS	JAMES RIVER	7/15/80	0.3	0.2
VT:VERNON	CONNECTICUT RIVER	7/20/80	0.3	0.2
WA:NORTHPORT	COLUMBIA RIVER	8/ 6/80	0.5	0.2
WA:RICHLAND	COLUMBIA RIVER	7/ 1/80	0.4	0.2
WI:TWO CREEKS	LAKE MICHIGAN	7/14/80	0.2	0.2
WI:VICTORY	MISSISSIPPI RIVER	7/15/80	0.2	0.2
WV:WHEELING	OHIO RIVER	7/ 7/80	0.4	0.2

NS NO SAMPLE
e 2 SIGMA COUNTING ERROR

TABLE 13

SURFACE WATER
TRITIUM CONCENTRATION

OCTOBER - DECEMBER 1980

LOCATION	SOURCE	DATE COLLECTED	nCi/l	± e
AL:DECATUR	TENNESSEE RIVER	10/ 9/80	0.5	0.2
AL:GORDON	CHATTAHOOCHIE RIVER	10/16/80	0.4	0.2
AL:SCOTTSBORO	TENNESSEE RIVER	10/10/80	0.4	0.2
AR:LITTLE ROCK	ARKANSAS RIVER	10/20/80	0.5	0.2
CA:CLAY STATION	FOLSOM S. CANAL	10/14/80	0.5	0.2
CA:DIABLO CANYON	PACIFIC OCEAN	10/17/80	0.2	0.2
CA:EUREKA	HUMBOLDT BAY	10/23/80	0.2	0.2
CA:EUREKA	HUMBOLDT BAY	12/31/80	0.1	0.2
CA:SAN ONOFRE	PACIFIC OCEAN	10/10/80	0.2	0.2
CO:GREELEY	SOUTH PLATTE RIVER	11/18/80	0.9	0.2
CT:EAST HADDAM	CONNECTICUT RIVER	10/22/80	0.4	0.2
CT:WATERFORD	LONG ISLAND SOUND	10/23/80	0.3	0.2
FL:CRYSTAL RIVER	GULF OF MEXICO	10/ 6/80	0.3	0.2
FL:FT. PIERCE	ATLANTIC OCEAN	10/20/80	0.4	0.2
FL:HOMESTEAD	BISCAYNE BAY	10/15/80	0.4	0.2
IA:CEDAR RAPIDS	CEDAR RIVER	12/30/80	0.4	0.2
ID:BUHL	SNAKE RIVER	10/15/80	0.3	0.2
IL:MARSEILLES	ILLINOIS RIVER	12/31/80	0.5	0.2
IL:MOLINE	MISSISSIPPI RIVER	11/15/80	0.4	0.2
IL:MORRIS	ILLINOIS RIVER	12/31/80	0.4	0.2
IL:ZION	LAKE MICHIGAN	10/15/80	0.4	0.2
LA:NEW ORLEANS	MISSISSIPPI RIVER	10/ 3/80	0.3	0.2
MA:PLYMOUTH	CAPE CODE BAY	10/ 6/80	0.5	0.2
MA:ROWE	DEERFIELD RIVER	10/31/80	0.6	0.2
MD:CONOWINGO	SUSQUEHANNA RIVER	10/ 7/80	0.4	0.2
MD:LUSBY	CHESAPEAKE BAY	10/ 7/80	0.4	0.2
ME:WISCASSET	MONTSEWAY BAY	10/ 7/80	0.4	0.2
MI:BRIDGMAN	LAKE MICHIGAN	10/15/80	0.4	0.2
MI:CHARLEVOIX	LAKE MICHIGAN	10/18/80	0.3	0.2
MI:MONROE	LAKE ERIE	10/13/80	0.5	0.2
MI:SOUTH HAVEN	LAKE MICHIGAN	10/15/80	0.4	0.2
MN:MONTICELLO	MISSISSIPPI RIVER	11/13/80	0.4	0.2
MN:RED WING	MISSISSIPPI RIVER	10/20/80	0.5	0.2
MS:PORT GIBSON	MISSISSIPPI RIVER	10/10/80	0.5	0.2
NC:CHARLOTTE	CATAWBA RIVER	10/ 6/80	0.4	0.2
NC:SOUTHPORT	ATLANTIC OCEAN	10/14/80	0.3	0.2
NE:RULO	MISSOURI RIVER	11/21/80	0.3	0.2
NJ:BAYSIDE	DELAWARE RIVER	10/ 8/80	0.4	0.2
NJ:OYSTER CREEK	OYSTER CREEK	10/ 2/80	0.4	0.2
NV:BOULDER CITY	COLORADO RIVER	10/15/80	0.3	0.2
NV:BOULDER CITY	COLORADO RIVER	12/30/80	0.4	0.2
NY:OSSINING	HUDSON RIVER	10/ 9/80	0.7	0.2
NY:OSWEGO	LAKE ONTARIO	10/ 7/80	0.5	0.2
NY:POUGHKEEPSIE	HUDSON RIVER	10/ 8/80	0.4	0.2
OH:TOLEDO	LAKE ERIE	10/ 7/80	0.4	0.2
OR:BRADWOOD	COLUMBIA RIVER	10/27/80	0.4	0.2
PA:DANVILLE	SUSQUEHANNA RIVER	10/10/80	0.4	0.2
SC:ALLENDALE	SAVANNAH RIVER	10/23/80	3.7	0.3
SC:BROAD RIVER	BROAD RIVER	10/10/80	0.3	0.2
SC:HARTSVILLE	LAKE ROBINSON	10/ 6/80	1.0	0.2
TN:DAISY	TENNESSEE RIVER	11/18/80	0.4	0.2
TX:EL PASO	RIO GRANDE	10/10/80	0.4	0.2
TX:MATAGORDA	COLORADO RIVER	12/10/80	0.4	0.2
VA:DOSWELL	NORTH ANNA RIVER	10/ 9/80	1.3	0.2
VT:VERNON	CONNECTICUT RIVER	11/ 3/80	0.4	0.2
WA:NORTHPORT	COLUMBIA RIVER	11/ 5/80	0.4	0.2
WA:RICHLAND	COLUMBIA RIVER	10/ 9/80	0.5	0.2
WI:TWO CREEKS	LAKE MICHIGAN	10/29/80	0.4	0.2
WI:VICTORY	MISSISSIPPI RIVER	10/29/80	0.5	0.2
WV:WHEELING	OHIO RIVER	10/ 9/80	0.5	0.2

NS NO SAMPLE
e 2 SIGMA COUNTING ERROR

Drinking Water

The drinking water program provides ambient radiation monitoring relevant to the effects of the nuclear power industry, natural environmental insult, and other pertinent sources. These data serve to assess trends and anomalies in concentrations, and to compare with standards set forth in the EPA "National Interim Primary Drinking Water Regulations." These regulations provide for approval of supplies when the combined radium-226 and radium-228 levels do not exceed 5 pCi/l, when the gross alpha (excluding radon and uranium) levels do not exceed 15 pCi/l, when tritium levels do not exceed 20,000 pCi/l, when the strontium-90 levels do not exceed 8 pCi/l, and when the gross beta levels do not exceed 50 pCi/l.

Grab samples are taken at 78 sites which are either major population centers or selected nuclear facility environs.

The analyses include (a) tritium on a quarterly basis (b) gross alpha, gross beta, and strontium-90 on annual composites (gamma analyses are performed if the gross beta activity is greater than 10 pCi/l; radium-226 analyses are performed if the gross alpha exceeds 2 pCi/l; and radium-228 analyses are performed if the radium-226 activity falls between 3 and 5 pCi/l) (c) specific iodine-131 is performed on one quarterly sample per year for each station (d) an annual composite for plutonium-238, -239, uranium-234, -235, -238, on 22 selected sampling locations corresponding to continuously operating air particulate stations.

Tritium analyses are performed by scintillation counting of the distilled samples, gross beta, and gross alpha by evaporating an aliquot on stainless steel planchets for counting, and radium-226 by the standard emanation technique. Strontium-90 is determined by beta counting a strontium carbonate precipitate isolated by ion exchange.

The results of tritium in drinking water analyses for July - December 1980 are shown in Tables 14 - 15.

The annual alpha, beta, gamma, radium, and strontium analyses for the January - December 1979 annual drinking water samples are shown in Table 16.

Plutonium and uranium analyses are similar to procedures given for air particulate samples. Analyses were altered to coincide with revised EPA standards.

Iodine-131 concentration in drinking water for January - December 1980 is shown in Table 17.

TABLE 14

DRINKING WATER
TRITIUM CONCENTRATION

JULY - SEPTEMBER 1980

LOCATION	DATE COLLECTED	nCi/l	± e
AK:FAIRBANKS	7/16/80	0.4	0.2
AL:DOTHAN	7/15/80	0.4	0.2
AL:MONTGOMERY	7/ 8/80	0.3	0.2
AL:MUSCLE SHOALS	7/10/80	0.4	0.2
AL:SCOTTSBORO	7/ 7/80	0.4	0.2
AR:LITTLE ROCK	7/ 7/80	0.3	0.2
CA:BERKELEY	7/ 7/80	0.3	0.2
CA:LOS ANGELES	7/ 7/80	0.4	0.2
CO:DENVER	7/24/80	0.3	0.2
CO:PLATTEVILLE	7/23/80	0.4	0.2
CT:HARTFORD	7/ 7/80	0.3	0.2
DC:WASHINGTON	7/ 1/80	0.3	0.2
DE:WILMINGTON	7/ 3/80	0.5	0.2
FL:MIAMI	7/ 1/80	0.1	0.2
FL:TAMPA	7/ 7/80	0.2	0.2
GA:BAXLEY	7/15/80	0.3	0.2
GA:SAVANNAH	7/22/80	2.8	0.3
HI:HONOLULU	7/25/80	0.2	0.2
IA:CEDAR RAPIDS	7/ 2/80	0.5	0.2
ID:BOISE	7/ 7/80	0.6	0.2
ID:IDAHO FALLS	7/10/80	0.5	0.2
IL:MORRIS	7/ 1/80	0.4	0.2
KS:TOPEKA	9/30/80	0.6	0.2
MA:LAWRENCE	7/14/80	0.4	0.2
MA:ROWE	7/30/80	0.7	0.2
MD:BALTIMORE	7/ 1/80	0.4	0.2
MD:CONOWINGO	7/15/80	0.3	0.2
ME:AUGUSTA	7/ 9/80	0.4	0.2
MI:DETROIT	7/17/80	0.4	0.2
MI:GRAND RAPIDS	7/17/80	0.4	0.2
MN:MINN/ST. PAUL	7/ 7/80	0.4	0.2
MN:RED WING	7/15/80	0.2	0.2
MO:JEFFERSON CITY	8/ 7/80	0.3	0.2
MS:JACKSON	7/ 2/80	0.3	0.2
MS:PORT GIBSON	7/ 2/80	0.3	0.2
NC:CHARLOTTE	7/14/80	0.3	0.2

TABLE 14 (CONTINUED)

DRINKING WATER
TRITIUM CONCENTRATION

JULY - SEPTEMBER 1980

LOCATION	DATE COLLECTED	nCi/l	± e
NC:WILMINGTON	7/ 1/80	0.4	0.2
ND:BISMARCK	7/ 2/80	0.6	0.2
NE:LINCOLN	7/ 1/80	0.4	0.2
NH:CONCORD	7/10/80	0.5	0.2
NJ:TRENTON	7/ 3/80	0.3	0.2
NJ:WARETOWN	7/ 9/80	1.0	0.2
NV:LAS VEGAS	7/ 7/80	0.4	0.2
NY:ALBANY	7/ 8/80	0.5	0.2
NY:NEW YORK CITY	7/ 1/80	0.2	0.2
NY:NIAGARA FALLS	7/ 1/80	0.4	0.2
NY:SYRACUSE	9/22/80	0.5	0.2
OH:CINCINNATI	7/ 3/80	0.3	0.2
OH:COLUMBUS	7/ 7/80	0.6	0.2
OH:EAST LIVERPOOL	7/14/80	0.6	0.2
OH:PAINESVILLE	7/ 8/80	0.3	0.2
OH:TOLEDO	7/ 8/80	0.8	0.2
OK:OKLAHOMA CITY	7/ 2/80	0.4	0.2
OR:PORTLAND	7/ 9/80	0.2	0.2
PA:HARRISBURG	7/ 7/80	0.2	0.2
PA:PITTSBURGH	7/14/80	0.3	0.2
PC:ANCON	7/ 2/80	0.2	0.2
RI:PROVIDENCE	7/ 3/80	0.4	0.2
SC:BARNWELL	7/ 3/80	0.2	0.2
SC:COLUMBIA	7/ 3/80	0.5	0.2
SC:COLUMBIA	7/15/80	0.2	0.2
SC:HARTSVILLE	7/14/80	0.2	0.2
SC:JENKINSVILLE	7/11/80	0.3	0.2
SC:SENECA	7/ 2/80	0.4	0.2
TN:CHATTANOOGA	7/23/80	0.4	0.2
TX:AUSTIN	7/ 3/80	0.4	0.2
VA:LYNCHBURG	7/ 7/80	0.4	0.2
VA:VIRGINIA BEACH	7/ 1/80	0.2	0.2
WA:RICHLAND	7/ 3/80	0.4	0.2
WA:SEATTLE	7/ 1/80	0.2	0.2
WI:GENOA	7/15/80	0.2	0.2
WI:MADISON	7/ 9/80	0.6	0.2

NS NO SAMPLE
e 2 SIGMA COUNTING ERROR

TABLE 15

DRINKING WATER
TRITIUM CONCENTRATION

OCTOBER - DECEMBER 1980

LOCATION	DATE COLLECTED	nCi/l	± e
AK:FAIRBANKS	10/16/80	0.7	0.2
AL:DOTHAN	10/16/80	0.2	0.2
AL:MONTGOMERY	11/18/80	0.4	0.2
AL:MUSCLE SHOALS	10/ 8/80	0.5	0.2
AL:SCOTTSBORO	10/10/80	0.4	0.2
AR:LITTLE ROCK	10/20/80	0.3	0.2
CA:BERKELEY	10/ 3/80	0.5	0.2
CA:LOS ANGELES	10/ 3/80	0.3	0.2
CO:DENVER	11/ 5/80	0.5	0.2
CO:PLATTEVILLE	10/30/80	0.5	0.2
CT:HARTFORD	10/ 6/80	0.3	0.2
DE:WILMINGTON	10/ 3/80	0.4	0.2
FL:MIAMI	10/ 3/80	0.3	0.2
FL:TAMPA	10/ 6/80	0.3	0.2
GA:SAVANNAH	10/24/80	3.4	0.3
HI:HONOLULU	10/27/80	0.2	0.2
IA:CEDAR RAPIDS	10/ 3/80	0.3	0.2
IA:CEDAR RAPIDS	12/29/80	0.5	0.2
ID:BOISE	10/ 3/80	0.4	0.2
ID:IDAHO FALLS	10/ 6/80	0.5	0.2
IL:MORRIS	10/ 3/80	0.1	0.2
KS:TOPEKA	12/29/81	0.3	0.2
LA:NEW ORLEANS	10/22/80	0.4	0.2
MA:LAWRENCE	10/ 6/80	0.4	0.2
MA:ROWE	10/31/80	0.2	0.2
MD:BALTIMORE	10/ 3/80	0.6	0.2
MD:CONOWINGO	10/ 7/80	0.4	0.2
ME:AUGUSTA	10/14/80	0.3	0.2
MI:DETROIT	10/20/80	0.6	0.2
MI:GRAND RAPIDS	10/23/80	0.5	0.2
MN:MINNEAPOLIS	10/ 2/80	0.3	0.2
MN:RED WING	10/20/80	0.3	0.2
MO:JEFFERSON CITY	10/29/80	0.2	0.2
MS:JACKSON	10/ 2/80	0.9	0.2
MS:PORT GIBSON	10/10/80	0.2	0.2
MT:HELENA	10/22/80	0.7	0.2
NC:CHARLOTTE	10/ 6/80	0.4	0.2
NC:WILMINGTON	10/13/80	0.5	0.2
ND:BISMARCK	10/ 3/80	0.6	0.2
NE:LINCOLN	10/ 6/80	0.2	0.2
NE:LINCOLN	12/31/80	0.5	0.2
NH:CONCORD	10/ 7/80	0.2	0.2
NJ:TRENTON	10/ 2/80	0.3	0.2
NJ:WARETOWN	10/ 7/80	0.2	0.2

TABLE 15 (CONTINUED)

DRINKING WATER
TRITIUM CONCENTRATION

OCTOBER - DECEMBER 1980

LOCATION	DATE COLLECTED	nCi/l	± e
NM:SANTA FE	10/ 6/80	0.3	0.2
NV:LAS VEGAS	10/14/80	0.5	0.2
NY:ALBANY	10/ 6/80	0.5	0.2
NY:NEW YORK CITY	10/ 3/80	0.4	0.2
NY:NIAGARA FALLS	10/ 1/80	0.6	0.2
NY:SYRACUSE	11/ 3/80	0.4	0.2
OH:COLUMBUS	10/ 9/80	0.6	0.2
OH:EAST LIVERPOOL	10/14/80	0.3	0.2
OH:PAINESVILLE	10/ 2/80	0.6	0.2
OH:TOLEDO	10/ 8/80	0.4	0.2
OK:OKLAHOMA CITY	10/ 3/80	0.2	0.2
OR:PORTLAND	10/ 8/80	0.4	0.2
PA:COLUMBIA	10/ 9/80	0.3	0.2
PA:HARRISBURG	10/ 9/80	0.3	0.2
PA:PITTSBURGH	10/14/80	0.3	0.2
PC:ANCON	11/18/80	0.3	0.2
RI:PROVIDENCE	10/ 3/80	0.4	0.2
SC:BARNWELL	10/ 9/80	0.4	0.2
SC:COLUMBIA	10/ 3/80	0.7	0.2
SC:HARTSVILLE	10/ 6/80	0.3	0.2
SC:JENKINSVILLE	10/10/80	0.3	0.2
SC:SENECA	10/21/80	0.5	0.2
TN:CHATTANOOGA	10/31/80	0.2	0.2
TX:AUSTIN	10/ 6/80	0.5	0.2
TX:AUSTIN	12/29/80	0.2	0.2
VA:DOSWELL	10/29/80	0.3	0.2
VA:DOSWELL	12/30/80	0.2	0.2
VA:LYNCHBURG	10/10/80	0.4	0.2
VA:VIRGINIA BEACH	10/ 6/80	0.3	0.2
WA:RICHLAND	10/ 8/80	0.5	0.2
WA:SEATTLE	10/ 6/80	0.2	0.2
WI:GENOA	11/21/80	0.3	0.2
WI:MADISON	12/ 4/80	0.2	0.2

NS NO SAMPLE
e 2 SIGMA COUNTING ERROR

TABLE 16

DRINKING WATER
ALPHA, BETA AND GAMMA CONCENTRATION

1979

ANNUAL ANALYSES

LOCATION	TOTAL SOLIDS mg/l	GROSS BETA DATE CTD. pCi/l ± e	GROSS ALPHA DATE CTD. pCi/l ± e	^{90}Sr pCi/l ± e	^{226}Ra pCi/l ± e	SPECIFIC GAMMA ACTIVITY
AK:ANCHORAGE	69.4	0.1 0.3 4/23/80	0.2 0.5 4/23/80	1.0 0.4	NA	ND
AK:FAIRBANKS	159.6	4.3 0.9 4/23/80	4.1 1.6 4/23/80	0.2 0.4	NA	ND
AL:DOTHAN	152.4	1.8 1.0 4/23/80	0.1 0.8 4/23/80	0.0 0.1	NA	ND
AL:MONTGOMERY	56.6	1.0 0.8 4/23/80	<2.0 2.0 4/23/80	0.5 0.7	NA	ND
AL:MUSCLE SHOALS	87.6	1.1 0.7 4/23/80	0.5 0.6 4/23/80	0.5 0.6	NA	ND
AL:SCOTTSBORO	104.4	2.3 0.9 4/23/80	<2.0 2.0 4/23/80	0.4 0.4	NA	ND
AR:LITTLE ROCK	38.2	1.0 0.7 5/13/80	0.3 0.4 5/13/80	0.7 0.5	NA	ND
CA:BERKELEY	43.8	0.9 0.7 5/13/80	0.1 0.4 5/13/80	0.2 0.2	NA	ND
CA:LOS ANGELES	341.2	4.6 1.3 5/13/80	0.5 0.5 5/13/80	0.2 0.4	NA	ND
CO:DENVER	53.0	0.5 0.6 5/13/80	0.5 0.5 5/13/80	0.1 0.1	NA	ND
CO:PLATTEVILLE	790.0	10.3 1.8 5/13/80	2.0 1.8 5/13/80	0.1 0.1	NA	ND
CT:HARTFORD	31.0	1.2 0.8 5/13/80	0.2 0.4 5/13/80	0.5 0.4	NA	ND
DC:WASHINGTON	138.2	1.6 1.0 5/15/80	1.8 2.1 5/15/80	0.3 0.3	NA	ND
DE:WILMINGTON	100.0	1.4 0.8 5/15/80	0.1 0.6 5/15/80	0.5 0.4	NA	ND

TABLE 16 (CONTINUED)

1979

ANNUAL ANALYSES

LOCATION	TOTAL SOLIDS mg/l	GROSS BETA DATE CTD. pCi/l ± e	GROSS ALPHA DATE CTD. pCi/l ± e	^{90}Sr pCi/l ± e	^{226}Ra pCi/l ± e	SPECIFIC GAMMA ACTIVITY
FL:MIAMI	230.0	1.8 1.0 5/15/80	0.1 0.8 5/15/80	0.1 0.1	NA	ND
FL:TAMPA	226.6	2.7 1.1 5/15/80	0.4 0.9 5/15/80	0.5 0.3	NA	ND
GA:BAXLEY	135.6	0.7 0.5 5/15/80	1.8 1.2 5/15/80	0.1 0.5	NA	ND
GA:SAVANNAH	73.4	1.7 0.9 5/21/80	0.1 0.4 5/21/80	0.6 0.4	NA	ND
HI:HONOLULU	190.0	1.6 0.9 5/22/80	<2.0 2.0 5/21/80	0.0 1.6	NA	ND
IA:CEDAR RAPIDS	141.2	1.1 0.9 5/22/80	<2.0 2.0 5/21/80	0.1 0.2	NA	ND
ID:BOISE	61.2	1.9 0.9 5/22/80	0.2 0.2 5/21/80	0.2 0.4	NA	ND
ID:IDAHO FALLS	217.6	3.4 1.1 5/22/80	0.6 0.9 5/21/80	0.0 0.1	NA	ND
IL:CHICAGO	176.8	25.2 2.3 5/22/80	<2.0 2.0 5/21/80	-0.2 0.5	NA	ND
IL:MORRIS	277.4	18.2 1.8 7/ 8/80	12.8 4.7 7/ 8/80	0.0 0.1	NA	ND
KS:TOPEKA	391.6	8.5 1.5 7/ 8/80	1.2 1.5 7/ 8/80	0.3 0.3	NA	ND
LA:NEW ORLEANS	156.8	2.2 1.0 7/ 8/80	0.7 1.0 7/ 8/80	0.3 0.3	NA	ND
MA:LAWRENCE	74.6	0.7 0.7 7/ 8/80	0.3 0.5 7/ 8/80	0.2 0.8	NA	ND
MA:ROWE	45.0	0.1 0.4 7/ 8/80	0.2 0.5 7/ 8/80	0.3 0.4	NA	ND
MD:BALTIMORE	89.2	0.1 0.4 7/ 8/80	<2.0 2.0 7/ 8/80	0.3 0.4	NA	ND

TABLE 16 (CONTINUED)

1979

ANNUAL ANALYSES

LOCATION	TOTAL SOLIDS mg/l	GROSS BETA DATE CTD. pCi/l ± e	GROSS ALPHA DATE CTD. pCi/l ± e	^{90}Sr pCi/l ± e	^{226}Ra pCi/l ± e	SPECIFIC GAMMA ACTIVITY
MD:CONOWINGO	207.8	2.2 1.0 7/10/80	0.1 0.8 7/11/80	0.3 0.3	NA	ND
ME:AUGUSTA	62.4	1.8 0.9 7/10/80	<2.0 2.0 7/11/80	0.7 0.5	NA	ND
MI:DETROIT	111.0	1.4 0.9 7/25/80	<2.0 2.0 7/25/80	0.0 0.1	NA	ND
MI:GRAND RAPIDS	46.8	1.0 0.7 7/18/80	0.1 2.0 7/18/80	1.3 0.6	NA	ND
MN:MINN/ST. PAUL	455.8	9.3 1. 7/10/80	1.4 1.4 7/11/80	0.2 0.8	NA	ND
MN:RED WING	253.4	4.7 1.3 7/10/80	2.6 1.5 7/11/80	0.1 1.8	NA	ND
MO:JEFFERSON CITY	302.0	2.0 0.8 7/10/80	2.9 1.7 7/11/80	0.1 1.1	NA	ND
MS:JACKSON	40.6	0.6 0.9 7/ 7/80	<2.0 2.0 7/ 8/80	0.5 0.6	NA	ND
MS:PORT GIBSON	405.6	3.3 1.2 7/10/80	0.1 1.2 7/11/80	-0.1 3.6	NA	ND
MT:HELENA	96.8	2.4 1.1 7/21/80	0.4 0.6 7/21/80	0.0 0.1	NA	ND
NC:CHARLOTTE	54.4	0.9 0.7 7/21/80	0.0 0.3 7/21/80	-0.1 0.1	NA	ND
NC:WILMINGTON	90.2	2.4 0.9 7/21/80	0.0 0.4 7/21/80	0.6 0.8	NA	ND
ND:BISMARCK	363.0	3.7 1.1 7/21/80	<2.0 2.0 7/21/80	0.4 0.5	NA	ND
NE:LINCOLN	176.2	8.8 1.4 7/21/80	1.3 1.2 7/21/80	0.4 0.6	NA	ND

TABLE 16 (CONTINUED)

1979

ANNUAL ANALYSES

LOCATION	TOTAL SOLIDS mg/l	GROSS BETA DATE CTD. pCi/l ± e	GROSS ALPHA DATE CTD. pCi/l ± e	^{90}Sr pCi/l ± e	^{226}Ra pCi/l ± e	SPECIFIC GAMMA ACTIVITY
NH:CONCORD	44.0	0.5 0.5 7/18/80	0.0 0.4 7/18/80	0.4 0.6	NA	ND
NJ:TRENTON	111.8	0.5 0.6 7/18/80	0.3 0.6 7/18/80	0.4 0.6	NA	ND
NJ:WARETOWN	5309.4	40.5 5.3 7/21/80	1.3 26.0 7/21/80	0.1 0.3	NA	ND
NM:SANTA FE	131.8	2.1 0.4 7/ 7/80	12.0 2.4 7/ 8/80	0.1 0.1	NA	ND
NV:LAS VEGAS	657.2	6.5 1.5 7/21/80	1.1 1.1 7/21/80	0.9 0.4	NA	ND
NY:ALBANY	68.2	0.7 0.7 7/21/80	0.2 0.5 7/21/80	0.4 0.4	NA	ND
NY:NEW YORK CITY	49.2	0.8 0.7 7/18/80	<2.0 2.0 7/18/80	0.4 0.4	NA	ND
NY:NIAGARA FALLS	80.4	1.1 1.1 7/18/80	<2.0 2.0 7/18/80	1.1 0.7	NA	ND
NY:SYRACUSE	80.4	2.0 0.9 7/14/80	0.2 0.5 7/14/80	0.5 0.2	NA	ND
OH:CINCINNATI	92.8	3.0 1.0 7/21/80	<2.0 2.0 7/21/80	0.3 0.4	NA	ND
OH:COLUMBUS	203.0	2.8 1.0 7/18/80	<2.0 2.0 7/18/80	0.1 0.1	NA	ND
OH:EAST LIVERPOOL	111.6	1.9 0.9 7/21/80	<2.0 2.0 7/21/80	0.4 0.3	NA	ND
OH:PAINESVILLE	192.8	3.0 1.1 7/25/80	<2.0 2.0 7/25/80	1.0 0.4	NA	ND
OH:TOLEDO	51.9	1.0 1.0 7/18/80	<2.0 2.0 7/18/80	0.6 0.5	NA	ND

TABLE 16 (CONTINUED)

1979

ANNUAL ANALYSES

LOCATION	TOTAL SOLIDS mg/l	GROSS BETA DATE CTD. pCi/l ± e	GROSS ALPHA DATE CTD. pCi/l ± e	^{90}Sr pCi/l ± e	^{226}Ra pCi/l ± e	SPECIFIC GAMMA ACTIVITY
OK:OKLAHOMA CITY	234.0	5.5 1.3 7/18/80	<2.0 2.0 7/18/80	0.9 0.4	NA	ND
OR:PORTLAND	21.2	0.7 0.7 7/ 7/80	0.1 0.2 7/ 7/80	0.1 0.1	NA	ND
PA:COLUMBIA	177.6	1.6 1.1 7/25/80	<2.0 2.0 7/25/80	0.5 0.4	NA	ND
PA:HARRISBURG	35.2	0.6 0.8 7/21/80	<2.0 2.0 7/21/80	0.4 0.4	NA	ND
PA:PITTSBURGH	104.4	1.0 0.9 7/25/80	<2.0 2.0 7/25/80	0.1 0.1	NA	ND
PC:ANCON	80.2	0.9 0.8 5/15/80	0.2 0.4 5/15/80	0.3 0.7	NA	ND
PR:SAN JUAN	104.4	IS 7/25/80	IS 7/25/80	0.1 0.3	NA	ND
RI:PROVIDENCE	54.2	0.5 0.6 7/25/80	<2.0 2.0 7/25/80	0.2 0.2	NA	ND
SC:BARNWELL	22.0	0.6 0.7 7/ 7/80	0.1 0.2 7/ 8/80	0.0 1.4	NA	ND
SC:COLUMBIA	43.2	2.1 0.9 7/21/80	<2.0 2.0 7/21/80	0.2 0.2	NA	ND
SC:HARTSVILLE	23.4	1.0 0.7 7/25/80	<2.0 2.0 7/25/80	0.2 0.3	NA	ND
SC:JENKINSVILLE	102.0	1.7 0.9 7/21/80	0.4 0.5 7/21/80	0.7 1.0	NA	ND
SC:SENECA	29.2	0.7 0.9 7/21/80	0.1 0.3 7/21/80	0.2 0.3	NA	ND
TN:CHATTANOOGA	89.0	1.9 0.9 7/14/80	<2.0 2.0 7/14/80	0.1 0.2	NA	ND

TABLE 16 (CONTINUED)

1979

ANNUAL ANALYSES

LOCATION	TOTAL SOLIDS mg/l	GROSS BETA DATE CTD. pCi/l ± e	GROSS ALPHA DATE CTD. pCi/l ± e	^{90}Sr pCi/l ± e	^{226}Ra pCi/l ± e	SPECIFIC GAMMA ACTIVITY
TN:KNOXVILLE	89.0	IS 7/14/80	IS 7/14/80	0.1 0.1	NA	ND
TX:AUSTIN	129.8	1.7 1.0 7/ 7/80	0.1 0.6 7/ 8/80	0.1 0.3	NA	ND
VA:DOSWELL	86.2	3.7 1.0 7/14/80	<2.0 2.0 7/14/80	-0.2 0.3	NA	ND
VA:LYNCHBURG	34.8	0.0 0.0 7/ 7/80	0.3 3.3 7/ 8/80	0.1 0.1	NA	ND
VA:NORFOLK	50.0	2.6 0.9 7/14/80	<2.0 2.0 7/14/80	0.4 0.2	NA	ND
WA:RICHLAND	53.8	0.4 1.4 7/14/80	0.4 0.5 7/14/80	0.0 0.1	NA	ND
WA:SEATTLE	11.2	1.5 1.0 7/ 7/80	0.1 0.3 7/ 8/80	0.0 0.1	NA	ND
WI:GENOA	130.0	1.6 1.0 7/ 7/80	0.7 0.8 7/ 9/80	0.0 0.1	NA	ND
WI:MADISON	28.6	0.6 0.1 7/ 8/80	0.1 0.4 7/ 9/80	-0.1 1.1	NA	ND

ND	NO ACTIVITY DETECTABLE
NA	NO ANALYSIS
IS	INSUFFICIENT SAMPLE
e	2 SIGMA COUNTING ERROR

TABLE 17

IODINE-131 IN DRINKING WATER
JANUARY - DECEMBER 1980

LOCATION	DATE COLLECTED	nCi/l	± e
AK:ANCHORAGE	4/14/80	-0.1	0.1
AK:FAIRBANKS	4/18/80	0.1	0.1
AL:DOTHAN	4/ 9/80	0.0	0.1
AL:MONTGOMERY	4/23/80	0.1	0.1
AL:MUSCLE SHOALS	4/ 2/80	0.1	0.1
AL:SCOTTSBORO	4/ 1/80	0.0	0.1
AR:LITTLE ROCK	4/ 2/80	0.8	0.3
CA:BERKELEY	7/ 7/80	0.0	0.1
CA:LOS ANGELES	4/ 4/80	-0.2	0.1
CO:DENVER	4/21/80	0.1	0.1
CO:PLATTEVILLE	7/23/80	0.1	0.1
CT:HARTFORD	4/ 9/80	-0.2	0.1
DC:WASHINGTON	7/ 1/80	-0.3	0.2
DE:WILMINGTON	4/ 3/80	0.0	0.1
FL:MIAMI	4/ 7/80	-0.2	0.1
FL:TAMPA	4/ 7/80	-0.3	0.1
GA:BAXLEY	NS		
GA:SAVANNAH	10/24/80	0.0	0.1
HI:HONOLULU	10/27/80	0.3	0.3
IA:CEDAR RAPIDS	10/ 3/80	-0.1	0.1
ID:BOISE	10/ 3/80	0.0	0.2
ID:IDAHO FALLS	4/10/80	-0.2	0.1
IL:CHICAGO	NS		
IL:MORRIS	4/ 1/80	0.6	0.1
KS:TOPEKA	4/ 1/80	-0.2	0.1
LA:NEW ORLEANS	4/ 7/80	-0.2	0.1
MA:LAWRENCE	4/ 8/80	0.1	0.1
MA:ROWE	7/30/80	0.1	0.2
MD:BALTIMORE	10/ 3/80	0.1	0.1
MD:CONOWINGO	7/15/80	0.1	0.1
ME:AUGUSTA	7/ 9/80	0.0	0.1
MI:DETROIT	7/17/80	0.0	0.1
MI:GRAND RAPIDS	10/23/80	-0.4	0.1
MN:MINNEAPOLIS	4/ 7/80	0.2	0.1
MN:RED WING	4/28/80	0.1	0.1
MO:JEFFERSON CITY	4/30/80	0.0	0.1
MS:JACKSON	4/ 2/80	-0.3	0.1
MS:PORT GIBSON	7/ 2/80	0.2	0.1
MT:HELENA	10/22/80	-0.4	0.1
NC:CHARLOTTE	4/10/80	-0.3	0.2
NC:WILMINGTON	4/ 1/80	-0.2	0.1
ND:BISMARCK	7/ 2/80	-0.5	0.1
NE:LINCOLN	10/ 6/80	0.0	0.1
NH:CONCORD	7/10/80	-0.1	0.1
NJ:TRENTON	10/ 2/80	0.0	0.1
NJ:WARETOWN	4/18/80	0.1	0.1

TABLE 17 (CONTINUED)

IODINE-131 IN DRINKING WATER
JANUARY - DECEMBER 1980

LOCATION	DATE COLLECTED	nCi/l	± e
NM:SANTA FE	10/ 6/80	0.1	0.1
NV:LAS VEGAS	7/ 7/80	-0.4	0.2
NY:ALBANY	7/ 8/80	0.2	0.2
NY:NEW YORK CITY	4/17/80	-0.1	0.1
NY:NIAGARA FALLS	4/ 8/80	-0.2	0.1
NY:SYRACUSE	11/ 3/80	-0.1	0.2
OH:CINCINNATI	4/ 2/80	-0.1	0.1
OH:COLUMBUS	4/15/80	0.1	0.1
OH:EAST LIVERPOOL	1/22/80	0.1	0.1
OH:PAINESVILLE	4/ 3/80	0.1	0.1
OH:PAINESVILLE	4/ 3/80	-0.1	0.1
OH:TOLEDO	1/13/81	0.1	0.2
OK:OKLAHOMA CITY	4/ 3/80	-0.1	0.1
OR:PORTLAND	10/ 8/80	0.1	0.1
PA:COLUMBIA	7/15/80	-0.1	0.4
PA:HARRISBURG	7/ 7/80	0.2	0.1
PA:PITTSBURGH	1/22/80	0.1	0.2
PC:ANCON	5/ 5/80	0.0	0.1
RI:PROVIDENCE	4/ 8/80	-0.2	0.1
SC:BARNWELL	10/ 9/80	0.2	0.2
SC:COLUMBIA	4/ 2/80	0.0	0.1
SC:HARTSVILLE	4/14/80	-0.1	0.1
SC:JENKINSVILLE	4/11/80	-0.2	0.1
SC:SENECA	7/ 2/80	-0.2	0.1
TN:CHATTANOOGA	4/28/80	0.0	0.2
TX:AUSTIN	4/ 3/80	0.1	0.1
VA:DOSWELL	10/29/80	0.3	0.2
VA:LYNCHBURG	7/ 7/80	0.0	0.1
VA:VIRGINIA BEACH	7/ 1/80	0.1	0.1
WA:RICHLAND	10/ 8/80	0.3	0.1
WA:SEATTLE	10/ 6/80	0.1	0.1
WI:GENOA	4/24/80	0.5	0.1
WI:MADISON	4/16/80	0.1	0.1

NS   NO SAMPLE
e   2 SIGMA COUNTING ERROR

All samples were taken as either a single grab sample or composite samples taken over 12 to 14 days.

Radon-222 in Drinking Water

Radon-222 in drinking water has previously been considered a source of radiation exposure primarily from an ingestion standpoint. The Office of Radiation Programs (ORP) of the U.S. Environmental Protection Agency (EPA) is investigating radon in water supplies to evaluate the possibility that a major pathway from inhalation exposure may exist in addition to the ingestion pathway. As an inert gas, radon is not chemically bound to the water and consequently can be released during any operation that aerates or agitates water. Depending upon the initial concentration of radon in water, significant quantities of radon could be released in a home or to the general environment.

To determine the scope of this potential problem, a national ground water sampling program has been initiated by the Eastern Environmental Radiation Facility (EERF) to obtain data on radon concentrations in water supplies throughout the country. Sampling kits have been assembled by EERF and distributed to various state health departments. The kit is designed so that state personnel can collect samples from potable water supplies and ship them, without loss of radon other than radioactive decay, to EERF for analysis. The choice of sampling locations and the number of supplies to be sampled is left to the discretion of the state programs. Each state is asked to obtain a representative sampling of ground water supplies within its boundaries. The extent of the sampling efforts and how representative the data are for a given state is determined primarily by the amount of time each state devotes to the program. The concentrations of radon in water are determined at the EERF by liquid scintillation counting. The limit of detection for this technique using a 50-minute count and a 10-ml sample is 0.16 pCi or 16 pci/l.

The sampling kits are being provided to the various states on a rotating schedule. This schedule is designed to cover the U.S. within approximately two years. As data from each state are compiled they will be published in ERD.

SECTION III. External Gamma Ambient Monitoring Program

The external gamma monitoring program, which began in October 1978, provides a continuous measurement of ambient gamma exposure rates, including cosmic, at selected sites throughout the continental United States. Data from this program will be used to evaluate fluctuations in natural background due to variations in environmental conditions and to provide a means of monitoring any significant increases in ambient gamma levels due to weapons fallout, reactor operations, etc. Initially, the program will consist of approximately 22 sites representing a wide geographic coverage throughout the country. Hopefully, at some later date additional sites will be added to the program. Although exposure measurements at these few sites are not totally representative of nationwide exposures, they will be indicative of national trends.

The monitoring program utilizes CaF_2:Mn thermoluminescent dosimeters (TLD´s). These dosimeters are commercially available glass-bulb type dosimeters with energy compensating shields. A group of four TLD´s is located at each station or site. Dosimeters are annealed by the station operator prior to positioning in the field. The dosimeters are returned to EERF for readout on an approximate one-month cycle. Several dosimeters are annealed by the station operator as controls and returned with the exposed field dosimeters to correct for any exposures accumulated during shipment.

Results from the period July 1980 through December 1980 are shown in Tables 18 - 19.

Note: Results from the period December 1978 through June 1980 are being republished due to the omission of one page of data in ERD 21 - 22.

TABLE 20 (FROM ERD 21 - 22)

ENVIRONMENTAL GAMMA AMBIENT MONITORING PROGRAM

LOCATION	DATE RANGE	INTEGRATED EXPOSURE MR	+/- 2S	EXPOSURE RATE MICRO R/HR	+/- 2S
AL:MONTGOMERY	123179- 20180	6.22	5.02	8.10	5.02
AL:MONTGOMERY	20180- 31080	7.46	6.75	8.40	6.75
AL:MONTGOMERY	40180- 50280	6.12	5.66	8.23	5.66
AL:MONTGOMERY	50280- 60280	6.09	5.16	8.19	5.16
AL:MONTGOMERY	60280- 70280	6.05	5.05	8.40	5.05
CA:BERKELEY	123179- 20180	4.78	5.33	6.22	5.33
CA:BERKELEY	20180- 33180	8.14	7.19	5.85	7.19
CA:BERKELEY	33180- 50680	3.20	10.33	3.60	10.33
CA:BERKELEY	50680- 60280	4.05	7.89	6.25	7.89
CA:BERKELEY	60280- 70180	3.90	5.69	5.60	5.69
CO:DENVER	120579- 10380	10.09	3.53	14.49	3.53
CO:DENVER	10380- 20480	11.37	3.80	14.81	3.80
CO:DENVER	20480- 40180	20.35	8.96	14.88	8.96
CO:DENVER	40180- 51280	14.35	8.90	14.58	8.90
CO:DENVER	51280- 61080	9.55	3.37	13.72	3.37
CO:DENVER	61080- 70180	7.49	3.54	14.87	3.54
FL:ORLANDO	20180- 40180	7.87	5.36	5.47	5.36
FL:ORLANDO	40180- 50580	4.64	6.61	5.69	6.61
FL:ORLANDO	50580- 53080	3.31	6.35	5.51	6.35
FL:ORLANDO	53080- 63080	4.29	4.68	5.77	4.68
ID:BOISE	120379- 10280	10.46	5.83	14.53	5.83
ID:BOISE	10280- 21180	13.29	5.05	13.85	5.05
ID:BOISE	21180- 33180	19.65	3.34	17.05	3.34
ID:BOISE	33180- 51280	13.94	3.60	13.51	3.60
ID:BOISE	51280- 60280	7.60	10.23	15.07	10.23
ID:BOISE	60280- 70380	9.97	4.67	13.40	4.67
IL:CHICAGO	120579- 10480	5.54	5.86	7.69	5.86
IL:CHICAGO	10480- 20580	5.57	4.85	7.25	4.85
IL:CHICAGO	20580- 40480	10.33	4.83	7.30	4.83
IL:CHICAGO	40480- 60580	10.90	5.41	7.32	5.41
IL:CHICAGO	60580- 70380	4.70	16.07	6.99	16.07
ND:BISMARCK	120479- 10480	6.58	7.96	8.84	7.96
ND:BISMARCK	10480- 20580	6.78	4.53	8.83	4.53
ND:BISMARCK	20580- 40180	12.27	3.94	9.13	3.94
ND:BISMARCK	40180- 51680	10.23	12.52	9.47	12.52
ND:BISMARCK	51680- 61080	5.65	6.41	9.41	6.41
ND:BISMARCK	61080- 70180	4.51	15.08	8.95	15.08
NJ:TRENTON	123179- 20180	7.63	4.42	9.94	4.42
NJ:TRENTON	20180- 33180	14.46	3.98	10.39	3.98
NJ:TRENTON	33180- 51680	11.61	10.08	10.29	10.08
NJ:TRENTON	51680- 60280	4.67	4.74	11.44	4.74
NJ:TRENTON	60280- 70280	7.94	4.07	11.03	4.07
NM:SANTA FE	120379- 11180	13.74	7.03	14.68	7.03
NM:SANTA FE	11180- 20780	8.95	3.43	13.81	3.43
NM:SANTA FE	20780- 41180	20.66	6.02	13.45	6.02
NM:SANTA FE	41180- 52980	15.55	6.03	13.50	6.03
NM:SANTA FE	52980- 60180	11.02	4.62	13.92	4.62

TABLE 20 (FROM ERD 21 - 22)

ENVIRONMENTAL GAMMA AMBIENT MONITORING PROGRAM

LOCATION	DATE RANGE	INTEGRATED EXPOSURE		EXPOSURE RATE	
		MR	+/- 2S	MICRO R/HR	+/- 2S
NV:LAS VEGAS	123179- 13180	5.30	8.52	7.12	8.52
NV:LAS VEGAS	13180- 40180	12.61	4.21	8.62	4.21
NV:LAS VEGAS	40180- 50580	5.88	5.74	7.20	5.74
NV:LAS VEGAS	50580- 53080	4.19	11.07	6.98	11.07
NV:LAS VEGAS	53080- 63080	5.09	5.12	6.84	5.12
NY:NEW YORK	121079- 10380	4.17	9.87	7.24	9.87
NY:NEW YORK	10380- 20780	6.66	7.71	7.92	7.71
NY:NEW YORK	20780- 41580	12.31	6.32	7.54	6.32
NY:NEW YORK	41580- 51580	5.72	7.07	7.94	7.07
NY:NEW YORK	51580- 60280	3.41	10.51	7.89	10.51
NY:NEW YORK	60280- 70980	7.05	4.54	7.93	4.54
OH:COLUMBUS	120379- 10380	5.49	6.74	7.38	6.74
OH:COLUMBUS	10380- 13080	4.67	5.30	7.20	5.30
OH:COLUMBUS	13080- 33180	10.10	8.07	7.01	8.07
OH:COLUMBUS	33180- 50680	6.08	18.48	6.85	18.48
OH:COLUMBUS	50680- 52980	4.11	4.71	7.44	4.71
OH:COLUMBUS	52980- 70180	5.76	6.23	7.27	6.23
OK:OKLAHOMA CITY	120479- 10280	5.43	6.59	7.81	6.59
OK:OKLAHOMA CITY	10280- 21380	7.87	3.34	7.80	3.34
OK:OKLAHOMA CITY	32880- 50680	7.35	11.87	7.65	11.87
OK:OKLAHOMA CITY	50680- 53080	4.55	4.49	7.89	4.49
OK:OKLAHOMA CITY	53080- 70780	7.06	5.42	7.75	5.42
OR:PORTLAND	10780- 30580	10.73	6.46	7.84	6.46
OR:PORTLAND	30580- 40480	5.49	6.91	7.38	6.91
OR:PORTLAND	40480- 51680	8.29	6.99	8.22	6.99
OR:PORTLAND	51680- 61180	4.92	4.49	7.89	4.49
RI:PROVIDENCE	20480- 40380	13.97	5.16	9.87	5.16
RI:PROVIDENCE	40380- 51380	9.13	5.02	9.51	5.02
RI:PROVIDENCE	51380- 60280	5.09	5.91	10.60	5.91
RI:PROVIDENCE	60280- 70380	7.26	7.62	9.76	7.62
SC:BARNWELL	120579- 10380	5.54	4.11	7.96	4.11
SC:BARNWELL	10380- 13180	5.51	6.03	8.20	6.03
SC:BARNWELL	13180- 41080	12.65	7.13	7.53	7.13
SC:BARNWELL	50880- 61080	6.27	12.26	7.91	12.26
SC:BARNWELL	60580- 70380	4.97	14.92	7.40	14.92
SC:COLUMBIA	113079- 10480	7.06	4.62	8.40	4.62
SC:COLUMBIA	10480- 20180	5.75	4.81	8.56	4.81
SC:COLUMBIA	20180- 32580	11.09	6.63	8.88	6.63
SC:COLUMBIA	32580- 50880	9.01	5.31	8.34	5.31
SC:COLUMBIA	50880- 53080	4.64	3.69	8.78	3.69
SC:COLUMBIA	53080- 70180	6.69	11.27	8.72	11.27
TN:KNOXVILLE	112779- 12980	14.15	9.53	9.36	9.53
TN:KNOXVILLE	12980- 22980	6.54	6.40	8.79	6.40
TN:KNOXVILLE	22980- 32880	6.32	4.45	9.76	4.45
TN:KNOXVILLE	32880- 50980	9.27	3.11	8.98	3.11
TN:KNOXVILLE	50980- 53080	4.77	5.06	9.47	5.06
TN:KNOXVILLE	53080- 62780	6.50	4.55	9.67	4.55

ENVIRONMENTAL GAMMA AMBIENT MONITORING PROGRAM

LOCATION	DATE RANGE	INTEGRATED EXPOSURE		EXPOSURE RATE	
		MR	+/- 2S	MICRO R/HR	+/- 2S
VA:RICHMOND	120379- 10280	5.30	3.99	7.36	3.99
VA:RICHMOND	10280- 20180	5.43	6.52	7.54	6.52
VA:RICHMOND	20180- 40280	10.56	6.29	7.21	6.29
VA:RICHMOND	40280- 60280	10.93	13.62	7.47	13.62
VA:RICHMOND	60280- 70180	5.44	4.83	7.81	4.83
VT:BARRE	120379- 10280	6.02	8.63	8.36	8.63
VT:BARRE	10280- 13180	5.95	3.87	8.55	3.87
VT:BARRE	13180- 32580	11.46	6.07	9.01	6.07
VT:MONTPELIER	32580- 50680	7.56	16.84	7.32	16.84
VT:MONTPELIER	50680- 60280	5.55	5.02	8.56	5.02
VT:MONTPELIER	60280- 70880	7.22	11.96	8.36	11.96

ND NO DATA FOR THIS PERIOD

S 2 SIGMA ERROR (IN PERCENT)

TABLE 18

ENVIRONMENTAL GAMMA AMBIENT MONITORING PROGRAM

LOCATION	DATE RANGE	MEAN FIELD EXPOSURE +/- 2SIG(%)			
		MR	+/- 2S	MICRO R/HR	+/- 2S
AL:MONTGOMERY	70280- 80480	6.51	5.13	8.22	5.13
AL:MONTGOMERY	80480- 90280	5.88	4.77	8.45	4.77
AL:MONTGOMERY	90280-100180	5.77	3.05	8.30	3.05
CA:BERKELEY	70180- 80180	4.30	6.29	5.77	6.29
CA:BERKELEY	80180- 82980	3.97	12.47	5.91	12.47
CA:BERKELEY	82980-100280	5.02	5.73	6.15	5.73
CO:DENVER	70180- 73180	10.44	6.09	14.51	6.09
CO:DENVER	73180- 90280	11.93	5.12	15.07	5.12
CO:DENVER	90280-100180	10.64	4.23	15.29	4.23
FL:ORLANDO	63080- 80180	4.44	5.98	5.78	5.98
FL:ORLANDO	80180- 82980	3.64	8.18	5.41	8.18
FL:ORLANDO	82980-100180	4.61	17.77	5.83	17.77
ID:BOISE	70380- 80180	8.96	10.53	12.87	10.53
ID:BOISE	80180- 90280	10.19	5.30	13.26	5.30
ID:BOISE	90280- 92980	9.18	8.74	14.17	8.74
IL:CHICAGO	70380- 80780	6.33	7.88	7.53	7.88
IL:CHICAGO	80780- 90580	5.27	4.47	7.57	4.47
IL:CHICAGO	90580-101480	6.73	5.93	7.19	5.93
ND:BISMARCK	70180- 80180	6.93	8.68	13.12	8.68
ND:BISMARCK	80180- 90580	7.63	4.64	9.08	4.64
ND:BISMARCK	90480- 93080	5.28	5.46	8.46	5.46
NJ:TRENTON	70279- 80179	7.51	4.62	10.43	4.62
NJ:TRENTON	70280- 73180	7.48	3.94	10.74	3.94
NJ:TRENTON	73180- 90280	8.85	3.60	11.17	3.60
NJ:TRENTON	90280-100180	7.35	9.78	10.56	9.78
NM:SANTA FE	70180- 80180	10.39	7.59	13.97	7.59
NM:SANTA FE	80180- 82680	8.41	9.00	14.02	9.00
NM:SANTA FE	82680-100380	12.77	8.28	14.01	8.28
NV:LAS VEGAS	63080- 73180	4.94	9.58	6.64	9.58
NV:LAS VEGAS	73180- 90280	5.59	5.47	7.06	5.47
NV:LAS VEGAS	90280- 93080	4.76	11.29	7.08	11.29
NY:NEW YORK	70980- 80880	5.68	6.25	7.89	6.25
NY:NEW YORK	80880- 90480	5.01	4.25	7.74	4.25
NY:NEW YORK	90480-100680	5.61	8.36	7.31	8.36
OH:COLUMBUS	70180- 73180	4.95	8.97	6.88	8.97
OH:COLUMBUS	73080- 82880	4.60	4.65	6.62	4.65
OH:COLUMBUS	82880- 93080	5.63	12.97	7.10	12.97
OK:OKLAHOMA CITY	70780- 80580	5.47	8.00	7.87	8.00
OK:OKLAHOMA CITY	80580- 90380	5.42	12.05	7.78	12.05
OK:OKLAHOMA CITY	90380-100380	5.72	4.32	7.94	4.32
OR:PORTLAND	61180- 71680	6.41	14.28	7.63	14.28
OR:PORTLAND	71680- 80480	3.34	16.16	7.33	16.16
OR:PORTLAND	80480- 90980	6.60	6.23	7.64	6.23
OR:PORTLAND	90980-100180	4.20	5.10	7.95	5.10
RI:PROVIDENCE	70380- 73080	6.60	4.73	10.19	4.73
RI:PROVIDENCE	73080- 90380	8.31	10.00	9.90	10.00
RI:PROVIDENCE	90380-100680	8.05	4.68	10.16	4.68
SC:BARNWELL	70380- 73180	4.95	20.45	7.37	20.45
SC:BARNWELL	73180- 82880	5.40	5.49	8.04	5.49
SC:BARNWELL	82880- 92680	5.59	13.74	8.03	13.74
SC:COLUMBIA	70180- 72980	6.39	5.03	9.51	5.03
SC:COLUMBIA	72980- 82680	5.88	4.00	8.75	4.00
SC:COLUMBIA	82680- 92680	6.58	4.43	8.85	4.43
TN:KNOXVILLE	62780- 80480	8.60	3.70	9.43	3.70
TN:KNOXVILLE	80480- 82880	5.61	4.62	9.74	4.62
VA:RICHMOND	70180- 73180	5.52	4.80	7.66	4.80
VA:RICHMOND	73180- 82780	5.00	5.27	7.72	5.27
VA:RICHMOND	82780-100180	6.60	4.72	7.86	4.72
VT:MONTPELIER	70880- 72880	4.01	5.93	8.35	5.93
VT:MONTPELIER	72980- 82980	6.13	13.79	8.24	13.79
VT:MONTPELIER	82980-100780	7.72	6.01	8.25	6.01

ND NO DATA FOR THIS PERIOD

S 2 SIGMA ERROR (IN PERCENT)

TABLE 19

ENVIRONMENTAL GAMMA AMBIENT MONITORING PROGRAM

LOCATION	DATE RANGE	INTEGRATED EXPOSURE MR	+/- 2S	EXPOSURE RATE MICRO R/HR	+/- 2S
AL:MONTGOMERY	100180-111280	8.27	3.03	8.20	3.03
AL:MONTGOMERY	120180- 10581	6.77	3.06	8.05	3.06
CA:BERKELEY	100280-103180	4.10	17.22	5.89	17.22
CA:BERKELEY	103180-120280	4.25	28.28	5.54	28.28
CA:BERKELEY	120280-123080	3.68	21.22	5.47	21.22
CO:DENVER	100180-103080	9.97	7.58	14.33	7.58
CO:DENVER	103080-120480	12.29	4.08	14.63	4.08
CO:DENVER	120480-123180	9.58	5.16	14.78	5.16
FL:ORLANDO	100180-103180	4.03	17.87	5.59	17.87
FL:ORLANDO	103180-120280	4.42	8.57	5.75	8.57
FL:ORLANDO	120280- 10581	4.57	8.63	5.60	8.63
ID:BOISE	92980-103180	10.08	3.34	13.12	3.34
ID:BOISE	103180-120180	10.12	5.39	13.60	5.39
ID:BOISE	120180- 10781	12.05	4.26	13.57	4.26
IL:CHICAGO	101480-110580	3.90	5.25	7.38	5.25
IL:CHICAGO	112480-120580	2.00	6.21	7.58	6.21
IL:CHICAGO	120580- 10681	5.40	7.73	7.03	7.73
ND:BISMARCK	102880-120280	8.59	5.11	10.23	5.11
NJ:TRENTON	100180-110180	8.11	5.44	10.90	5.44
NJ:TRENTON	110180-120380	7.74	3.62	10.08	3.62
NJ:TRENTON	120380-123180	6.67	4.92	9.93	4.92
NM:SANTA FE	100380-103080	9.36	7.64	14.45	7.64
NM:SANTA FE	103080-112680	9.05	8.35	13.97	8.35
NM:SANTA FE	112680-121980	7.33	4.98	13.28	4.98
NM:SANTA FE	121980- 11481	8.38	9.12	13.42	9.12
NV:LAS VEGAS	93080-103080	5.08	5.51	7.06	5.51
NV:LAS VEGAS	103080-120280	5.72	5.23	7.23	5.23
NV:LAS VEGAS	120280-123180	4.51	14.86	6.48	14.86
NY:NEW YORK	100680-111080	6.85	14.74	7.51	14.74
NY:NEW YORK	111080-120580	5.24	5.90	7.80	5.90
NY:NEW YORK	120580- 10881	5.83	5.30	7.14	5.30
OH:COLUMBUS	93080-103080	5.19	5.31	7.21	5.31
OH:COLUMBUS	103080-120480	6.16	4.67	7.33	4.67
OH:COLUMBUS	120480- 10281	5.07	5.23	7.28	5.23
OK:OKLAHOMA CITY	100380-102880	4.98	11.85	8.30	11.85
OK:OKLAHOMA CITY	102880-120480	5.65	7.37	6.36	7.37
OK:OKLAHOMA CITY	120480- 10781	6.58	5.13	8.06	5.13
OR:PORTLAND	100180-110380	5.79	4.97	7.32	4.97
OR:PORTLAND	110380-120380	5.65	8.60	7.85	8.60
OR:PORTLAND	120380- 10781	6.36	13.69	7.57	13.69
RI:PROVIDENCE	100680-110780	7.92	7.94	10.32	7.94
RI:PROVIDENCE	110780-120380	6.24	3.29	10.00	3.29
RI:PROVIDENCE	120380- 11281	10.56	4.60	11.00	4.60
SC:BARNWELL	92680-110680	7.91	4.58	8.04	4.58
SC:BARNWELL	110680-120480	5.04	17.17	7.50	17.17
SC:BARNWELL	120480- 11581	7.74	5.99	7.68	5.99
SC:COLUMBIA	92680-103080	6.98	5.23	8.55	5.23
SC:COLUMBIA	103080-120280	6.80	6.49	8.59	6.49
SC:COLUMBIA	120280-123080	5.68	6.92	8.45	6.92
TN:KNOXVILLE	82880-102180	11.83	5.53	9.13	5.53
TN:KNOXVILLE	102180-122380	14.11	6.69	9.33	6.69
VA:RICHMOND	100180-103180	5.60	4.49	7.78	4.49
VA:RICHMOND	103180-120180	5.90	8.64	7.93	8.64
VA:RICHMOND	120180-123180	5.45	4.22	7.57	4.22
VT:MONTPELIER	100780-110380	5.41	4.08	8.35	4.08
VT:MONTPELIER	110380-120480	6.12	5.36	8.23	5.36
VT:MONTPELIER	120480- 12081	9.10	6.75	8.07	6.75

ND NO DATA FOR THIS PERIOD

S 2 SIGMA ERROR (IN PERCENT)

SECTION IV. Milk Program

Pasteurized Milk

This is a cooperative program of the EPA, ORP and the Dairy and Lipid Products Branch, Milk Sanitation Section, Food and Drug Administration. Milk is a reliable indicator of the general populations intake of radionuclides since it is consumed by a large segment of the population and contains several of the biologically important contaminants resulting from environmental releases from nuclear activities. A primary function of this program is to obtain reliable monitoring data relative to current radionuclide concentrations and determine any long-term trends.

Monthly samples are collected at 65 sampling sites with one or more located in each state, Puerto Rico, and the Panama Canal. These are composite samples representing more than 80 percent of the milk consumed in major population centers.

These samples are analyzed for iodine-131, barium-140, cesium-137, and potassium. All 65 samples are analyzed annually in July for strontium-89, and strontium-90. Also, for the first month of the three quarters beginning January, April and October, 10 regional composite samples of milk made up from the states within each of EPA's 10 regions are analyzed for strontium-89 and strontium-90.

Iodine-131, barium-140, cesium-137 and potassium are determined by gamma spectral analysis. Strontium-89 and strontium-90 are determined by beta counting a total strontium precipitate which has been chemically separated by ion-exchange.

The values from the pasteurized milk samples for July - December 1980 are shown in Tables 20 - 25. Strontium values from regional composite samples collected October 1980 are shown in Table 26.

Tritium in Milk

It was previously proposed to analyze all 65 milk samples for tritium in the aqueous and organic phases, on an annual basis (on the April sample). The EERF is currently evaluating alternative analytical techniques anticipating that these analyses will begin during the coming year.

TABLE 20

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

JULY 1980

LOCATION	DATE COLLECTED	K g/l ± e		^{137}Cs pCi/l±e		^{140}Ba pCi/l±e		^{131}I pCi/l±e	
AL:MONTGOMERY	7/ 9/80	1.42	0.12	1.	7.	-3.	8.	2.	7.
AR:LITTLE ROCK	7/ 6/80	1.51	0.12	3.	7.	-8.	8.	1.	7.
AZ:PHOENIX	7/10/80	1.39	0.08	2.	5.	1.	6.	-2.	5.
CA:LOS ANGELES	7/ 7/80	1.44	0.12	0.	7.	-5.	8.	-2.	7.
CA:SACRAMENTO	7/ 1/80	1.42	0.12	-1.	7.	-8.	8.	1.	7.
CA:SAN FRANCISCO	7/10/80	1.27	0.12	4.	7.	4.	8.	-1.	7.
CO:DENVER	7/31/80	1.20	0.12	2.	7.	1.	8.	-3.	7.
CT:HARTFORD	7/ 7/80	1.51	0.12	7.	7.	-6.	8.	3.	7.
DC:WASHINGTON	7/ 7/80	1.45	0.08	2.	5.	-5.	6.	2.	5.
DE:WILMINGTON	7/ 7/80	1.48	0.12	0.	7.	0.	8.	0.	7.
FL:TAMPA	7/ 1/80	1.38	0.12	13.	7.	-2.	8.	-6.	7.
GA:ATLANTA	7/29/80	1.46	0.12	5.	7.	0.	8.	1.	7.
HI:HONOLULU	7/ 1/80	1.49	0.12	12.	7.	-9.	8.	3.	7.
IA:DES MOINES	7/ 7/80	1.41	0.12	4.	7.	-2.	8.	0.	7.
ID:IDAHO FALLS	7/ 2/80	1.33	0.12	2.	7.	-1.	8.	0.	7.
IL:CHICAGO	7/ 7/80	1.49	0.12	-1.	7.	-9.	8.	2.	7.
IN:INDIANAPOLIS	7/ 7/80	1.44	0.12	-1.	7.	2.	8.	-3.	7.
KS:WICHITA	7/ 9/80	1.38	0.08	3.	5.	-5.	6.	3.	5.
KY:LOUISVILLE	7/ 8/80	1.34	0.12	1.	7.	-1.	8.	-1.	7.
LA:NEW ORLEANS	7/ 2/80	1.42	0.07	4.	4.	-2.	5.	2.	4.
MA:BOSTON	7/ 8/80	1.44	0.12	11.	7.	-4.	8.	0.	7.
MD:BALTIMORE	7/ 7/80	1.50	0.12	5.	7.	-5.	8.	-1.	7.
ME:PORTLAND	7/ 8/80	1.41	0.12	8.	7.	-5.	8.	-2.	7.
MI:DETROIT	7/10/80	1.46	0.12	2.	7.	-1.	8.	0.	7.
MI:GRAND RAPIDS	7/ 7/80	1.40	0.12	5.	7.	-2.	8.	2.	7.
MN:MINN/ST. PAUL	7/ 8/80	1.42	0.12	7.	7.	0.	8.	-4.	7.
MO:KANSAS CITY	7/11/80	1.39	0.12	-1.	7.	3.	8.	1.	7.
MO:ST. LOUIS	7/ 2/80	1.40	0.12	4.	7.	-7.	8.	1.	7.
MS:JACKSON	7/ 7/80	1.36	0.08	2.	5.	-8.	6.	0.	5.
MT:HELENA	7/ 2/80	1.38	0.12	4.	7.	-4.	8.	-3.	7.
NC:CHARLOTTE	7/ 7/80	1.56	0.22	5.	15.	-24.	19.	7.	13.
ND:MINOT	7/22/80	1.47	0.08	-2.	5.	-5.	6.	2.	5.
NE:OMAHA	7/11/80	1.06	0.11	2.	7.	-2.	8.	0.	7.
NH:MANCHESTER	7/ 7/80	1.40	0.08	10.	5.	0.	6.	3.	5.
NJ:TRENTON	7/11/80	1.39	0.12	2.	7.	-4.	8.	-1.	7.
NY:BUFFALO	7/ 7/80	1.41	0.12	0.	7.	-3.	8.	5.	7.
NY:NEW YORK CITY	7/ 7/80	1.42	0.08	2.	5.	-4.	6.	3.	5.
NY:SYRACUSE	7/ 7/80	1.40	0.12	7.	7.	-7.	8.	-3.	7.

TABLE 20 (CONTINUED)

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

JULY 1980

LOCATION	DATE COLLECTED	K g/l ± e		^{137}Cs pCi/l±e		^{140}Ba pCi/l±e		^{131}I pCi/l±e	
OH:CINCINNATI	7/ 7/80	1.38	0.08	3.	5.	-7.	6.	0.	5.
OH:CLEVELAND	7/ 7/80	1.43	0.12	-1.	7.	-4.	8.	3.	7.
OK:OKLAHOMA CITY	7/ 7/80	1.34	0.22	-5.	15.	-16.	19.	-3.	13.
OR:PORTLAND	7/ 7/80	1.39	0.12	-1.	7.	1.	8.	1.	7.
PA:PHILADELPHIA	7/ 7/80	1.50	0.12	4.	7.	-8.	8.	-1.	7.
PA:PITTSBURGH	7/ 9/80	1.34	0.12	1.	7.	-6.	8.	1.	7.
PC:CRISTOBAL	7/17/80	1.45	0.12	11.	7.	-5.	8.	-2.	7.
PR:SAN JUAN	7/ 9/80	1.42	0.12	2.	7.	-5.	8.	-1.	7.
SC:CHARLESTON	7/29/80	1.49	0.12	2.	7.	3.	8.	1.	7.
TN:CHATTANOOGA	7/ 7/80	1.43	0.12	4.	7.	-6.	8.	3.	7.
TN:KNOXVILLE	7/ 9/80	1.38	0.12	7.	7.	-3.	8.	-2.	7.
UT:SALT LAKE CITY	7/ 7/80	1.43	0.12	-1.	7.	0.	8.	-1.	7.
VA:NORFOLK	7/ 3/80	1.44	0.12	0.	7.	-3.	8.	0.	7.
VT:BURLINGTON	7/ 8/80	1.34	0.12	9.	7.	-6.	8.	-1.	7.
WA:SEATTLE	7/ 7/80	1.39	0.12	0.	7.	-3.	8.	5.	7.
WA:SPOKANE	7/ 8/80	1.39	0.08	2.	5.	-2.	6.	-2.	5.
WI:MILWAUKEE	7/ 3/80	1.43	0.12	-4.	7.	-5.	8.	-1.	7.
WV:CHARLESTON	7/ 1/80	1.44	0.12	3.	7.	0.	8.	-3.	7.
WY:LARAMIE	7/15/80	1.51	0.12	0.	7.	-8.	8.	-1.	7.

NS NO SAMPLE
e 2 SIGMA COUNTING ERROR

TABLE 21

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

AUGUST 1980

LOCATION	DATE COLLECTED	K g/l ± e		^{137}Cs pCi/l±e		^{140}Ba pCi/l±e		^{131}I pCi/l±e	
AL:MONTGOMERY	8/11/80	1.46	0.12	10.	7.	-4.	8.	-1.	7.
AR:LITTLE ROCK	8/ 4/80	1.44	0.12	-1.	7.	-5.	8.	-1.	7.
AZ:PHOENIX	8/ 7/80	1.40	0.12	3.	7.	-3.	8.	-4.	7.
CA:LOS ANGELES	8/14/80	1.53	0.12	0.	7.	-4.	8.	2.	7.
CA:SACRAMENTO	8/ 5/80	1.43	0.12	3.	7.	-4.	8.	3.	7.
CA:SAN FRANCISCO	8/ 7/80	1.43	0.12	0.	7.	-5.	8.	2.	7.
CO:DENVER	8/29/80	1.39	0.12	2.	7.	-6.	8.	3.	7.
CT:HARTFORD	8/ 4/80	1.48	0.12	0.	7.	-5.	8.	-3.	7.
DC:WASHINGTON	8/ 5/80	1.36	0.12	-2.	7.	-2.	8.	2.	7.
DE:WILMINGTON	8/11/80	1.38	0.08	2.	5.	-2.	6.	2.	5.
FL:TAMPA	8/ 4/80	1.45	0.12	15.	7.	-3.	8.	-2.	7.
HI:HONOLULU	8/ 5/80	1.44	0.08	7.	5.	-6.	6.	-1.	5.
IA:DES MOINES	8/ 4/80	1.42	0.12	4.	7.	-7.	8.	1.	7.
ID:IDAHO FALLS	8/ 4/80	1.46	0.22	-1.	15.	-11.	19.	-6.	13.
IL:CHICAGO	8/ 4/80	1.48	0.12	3.	7.	0.	8.	-2.	7.
IN:INDIANAPOLIS	8/ 4/80	1.45	0.08	2.	5.	-4.	6.	1.	5.
KS:WICHITA	8/ 6/80	1.36	0.12	1.	7.	-2.	8.	6.	7.
LA:NEW ORLEANS	8/ 7/80	1.44	0.12	2.	7.	3.	8.	-4.	7.
MA:BOSTON	8/ 5/80	1.37	0.12	3.	7.	1.	8.	2.	7.
MD:BALTIMORE	8/ 1/80	1.44	0.12	2.	7.	5.	8.	0.	7.
ME:PORTLAND	8/ 5/80	1.50	0.08	10.	5.	-2.	6.	-4.	5.
MI:DETROIT	8/ 7/80	1.43	0.12	6.	7.	-8.	8.	3.	7.
MI:GRAND RAPIDS	8/ 4/80	1.37	0.12	5.	7.	-2.	8.	-3.	7.
MN:MINN/ST. PAUL	8/ 5/80	1.35	0.12	-4.	7.	3.	8.	1.	7.
MO:KANSAS CITY	8/ 8/80	1.34	0.12	-1.	7.	1.	8.	-3.	7.
MO:ST. LOUIS	8/ 6/80	1.39	0.12	1.	7.	-2.	8.	2.	7.
MS:JACKSON	8/ 4/80	1.39	0.12	5.	7.	2.	8.	-1.	7.
NC:CHARLOTTE	8/ 4/80	1.61	0.16	14.	11.	-1.	14.	15.	9.
NE:OMAHA	8/ 8/80	1.39	0.08	2.	5.	-7.	6.	2.	5.
NH:MANCHESTER	8/ 4/80	1.31	0.12	7.	7.	0.	8.	0.	7.
NJ:TRENTON	8/ 1/80	1.47	0.12	2.	7.	-4.	8.	-3.	7.
NM:ALBUQUERQUE	8/ 5/80	1.37	0.12	3.	7.	-2.	8.	-4.	7.
NY:BUFFALO	8/11/80	1.52	0.12	-1.	7.	-3.	8.	1.	7.
NY:NEW YORK CITY	8/ 4/80	1.37	0.12	-2.	7.	2.	8.	0.	7.
NY:SYRACUSE	8/ 4/80	1.36	0.08	0.	5.	-2.	6.	-2.	5.

TABLE 21 (CONTINUED)

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

AUGUST 1980

	DATE	K		^{137}Cs		^{140}Ba		^{131}I	
LOCATION	COLLECTED	g/l ± e		pCi/l±e		pCi/l±e		pCi/l±e	
OH:CINCINNATI	8/11/80	1.41	0.12	5.	7.	-4.	8.	3.	7.
OH:CLEVELAND	8/ 7/80	1.33	0.12	1.	7.	0.	8.	4.	7.
OK:OKLAHOMA CITY	8/ 4/80	1.44	0.08	1.	5.	-6.	6.	-2.	5.
OR:PORTLAND	8/ 4/80	1.44	0.07	5.	4.	0.	5.	3.	4.
PA:PHILADELPHIA	8/ 4/80	1.29	0.12	-1.	7.	-4.	8.	0.	7.
PA:PITTSBURGH	8/ 6/80	1.39	0.12	0.	7.	-3.	8.	8.	7.
PC:CRISTOBAL	8/21/80	1.39	0.12	4.	7.	-4.	8.	-2.	7.
PR:SAN JUAN	8/15/80	1.29	0.12	6.	7.	-1.	8.	-3.	7.
SC:CHARLESTON	8/28/80	1.47	0.22	1.	15.	-10.	19.	0.	13.
TN:CHATTANOOGA	8/ 4/80	1.36	0.12	7.	7.	2.	8.	-3.	7.
TN:KNOXVILLE	8/ 6/80	1.49	0.08	0.	5.	-2.	6.	0.	5.
UT:SALT LAKE CITY	8/ 4/80	1.39	0.08	5.	5.	-4.	6.	0.	5.
VA:NORFOLK	8/ 1/80	1.52	0.08	5.	5.	-3.	6.	3.	5.
VT:BURLINGTON	8/ 4/80	1.40	0.12	8.	7.	-6.	8.	0.	7.
WA:SEATTLE	8/ 4/80	1.46	0.12	1.	7.	-4.	8.	-4.	7.
WA:SPOKANE	8/ 5/80	1.48	0.12	4.	7.	-5.	8.	-8.	7.
WI:MILWAUKEE	8/ 1/80	1.44	0.12	-2.	7.	-2.	8.	-5.	7.
WV:CHARLESTON	8/ 4/80	1.38	0.12	6.	7.	0.	8.	8.	7.
WY:LARAMIE	8/26/80	1.35	0.12	5.	7.	-9.	8.	2.	7.

NS	NO SAMPLE
e	2 SIGMA COUNTING ERROR

TABLE 22

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

SEPTEMBER 1980

LOCATION	DATE COLLECTED	K		^{137}Cs		^{140}Ba		^{131}I	
		g/l ± e		pCi/l±e		pCi/l±e		pCi/l±e	
AL:MONTGOMERY	9/ 3/80	1.39	0.12	6.	7.	-1.	8.	4.	7.
AR:LITTLE ROCK	9/ 8/80	1.45	0.08	5.	5.	0.	6.	2.	5.
AZ:PHOENIX	9/11/80	1.44	0.12	2.	7.	0.	8.	4.	7.
CA:LOS ANGELES	9/ 8/80	1.53	0.12	5.	7.	0.	8.	8.	7.
CA:SACRAMENTO	9/ 4/80	1.40	0.22	0.	15.	-3.	19.	4.	13.
CA:SAN FRANCISCO	9/ 8/80	1.40	0.08	-2.	5.	2.	6.	-1.	5.
CO:DENVER	9/30/80	1.40	0.12	-2.	7.	-2.	8.	2.	7.
CT:HARTFORD	9/ 8/80	1.44	0.08	7.	5.	-4.	6.	-1.	5.
DC:WASHINGTON	9/ 7/80	1.47	0.12	10.	7.	-5.	8.	1.	7.
DE:WILMINGTON	9/23/80	1.30	0.12	0.	7.	-4.	8.	2.	7.
FL:TAMPA	9/ 2/80	1.37	0.12	16.	7.	-2.	8.	4.	7.
HI:HONOLULU	9/ 2/80	1.38	0.12	11.	7.	-2.	8.	19.	12.
IA:DES MOINES	9/ 2/80	1.43	0.12	5.	7.	-8.	8.	5.	7.
ID:IDAHO FALLS	9/10/80	1.43	0.08	4.	5.	-1.	6.	-1.	5.
IL:CHICAGO	9/ 8/80	1.37	0.12	7.	7.	1.	8.	-3.	7.
IN:INDIANAPOLIS	9/ 8/80	1.48	0.12	5.	7.	-2.	8.	0.	7.
KS:WICHITA	9/ 4/80	1.44	0.12	4.	7.	6.	8.	0.	7.
KY:LOUISVILLE	9/ 8/80	1.42	0.12	-1.	7.	0.	8.	1.	7.
LA:NEW ORLEANS	9/ 4/80	1.33	0.12	4.	7.	-1.	8.	-1.	7.
MA:BOSTON	9/ 9/80	1.44	0.12	5.	7.	-4.	8.	2.	7.
MD:BALTIMORE	9/ 5/80	1.51	0.08	6.	5.	2.	6.	0.	5.
ME:PORTLAND	9/ 9/80	1.44	0.12	5.	7.	0.	8.	8.	7.
MI:DETROIT	9/11/80	1.46	0.12	9.	7.	-5.	8.	6.	7.
MN:MINN/ST. PAUL	9/ 6/80	1.50	0.12	7.	7.	-3.	8.	8.	7.
MO:KANSAS CITY	9/12/80	1.38	0.08	2.	5.	6.	6.	0.	5.
MO:ST. LOUIS	9/ 3/80	1.58	0.12	6.	7.	-2.	8.	3.	7.
MS:JACKSON	9/ 8/80	1.39	0.12	3.	7.	1.	8.	1.	7.
MT:HELENA	9/ 8/80	1.49	0.12	8.	7.	-5.	8.	2.	7.
NC:CHARLOTTE	9/ 2/80	1.39	0.22	0.	15.	-14.	19.	-1.	13.
ND:MINOT	9/29/80	1.46	0.12	3.	7.	-3.	8.	2.	7.
ND:MINOT	9/ 2/80	1.43	0.12	3.	7.	-1.	8.	1.	7.
NE:OMAHA	9/12/80	1.27	0.12	5.	7.	-5.	8.	4.	7.
NH:MANCHESTER	9/ 2/80	1.31	0.12	3.	7.	-15.	9.	-4.	7.
NM:ALBUQUERQUE	9/ 8/80	1.40	0.12	7.	7.	2.	8.	7.	7.
NV:LAS VEGAS	9/ 9/80	1.38	0.12	2.	7.	1.	8.	8.	7.
NY:BUFFALO	9/ 8/80	1.47	0.07	1.	4.	-2.	5.	2.	4.
NY:NEW YORK CITY	9/ 8/80	1.50	0.12	2.	7.	3.	8.	6.	7.
NY:SYRACUSE	9/ 8/80	1.41	0.12	-1.	7.	0.	8.	5.	7.

TABLE 22 (CONTINUED)

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

SEPTEMBER 1980

LOCATION	DATE COLLECTED	K g/l ± e		^{137}Cs pCi/l±e		^{140}Ba pCi/l±e		^{131}I pCi/l±e	
OH:CINCINNATI	9/ 9/80	1.33	0.12	3.	7.	1.	8.	0.	7.
OH:CLEVELAND	9/ 8/80	1.36	0.12	5.	7.	-4.	8.	3.	7.
OK:OKLAHOMA CITY	9/ 8/80	1.30	0.12	2.	7.	1.	8.	1.	7.
OR:PORTLAND	9/ 8/80	1.39	0.12	3.	7.	-3.	8.	0.	7.
PA:PHILADELPHIA	9/ 8/80	1.39	0.12	4.	7.	4.	8.	3.	7.
PA:PITTSBURGH	9/ 8/80	1.40	0.12	7.	7.	3.	8.	-2.	7.
PC:ANCON	9/25/80	1.32	0.12	12.	7.	0.	8.	-5.	7.
SC:CHARLESTON	9/ 9/80	1.38	0.22	14.	15.	-8.	19.	2.	13.
TN:CHATTANOOGA	9/ 8/80	1.49	0.08	2.	5.	4.	6.	2.	5.
TN:KNOXVILLE	9/17/80	1.44	0.12	1.	7.	-4.	8.	-2.	7.
UT:SALT LAKE CITY	9/ 8/80	1.39	0.12	8.	7.	2.	8.	8.	7.
VA:NORFOLK	9/ 5/80	1.51	0.12	3.	7.	1.	8.	1.	7.
WA:SEATTLE	9/ 8/80	1.39	0.12	0.	7.	0.	8.	2.	7.
WA:SPOKANE	9/ 2/80	1.38	0.12	-3.	7.	-2.	8.	3.	7.
WI:MILWAUKEE	9/ 2/80	1.36	0.08	3.	5.	-5.	6.	-2.	5.
WV:CHARLESTON	9/ 2/80	1.37	0.12	6.	7.	-5.	8.	2.	7.
WY:LARAMIE	9/11/80	1.42	0.08	2.	5.	-1.	6.	4.	5.

NS	NO SAMPLE
e	2 SIGMA COUNTING ERROR

TABLE 23

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

OCTOBER 1980

LOCATION	DATE COLLECTED	K g/l ± e		^{137}Cs pCi/l±e		^{140}Ba pCi/l±e		^{131}I pCi/l±e	
AK:ANCHORAGE	10/21/80	1.39	0.12	3.	7.	8.	8.	-5.	7.
AK:ANCHORAGE	10/24/80	1.51	0.08	9.	5.	6.	6.	-3.	5.
AK:PALMER	10/28/80	1.47	0.12	1.	7.	-1.	8.	-3.	7.
AK:PALMER	10/31/80	1.54	0.22	11.	15.	-2.	20.	11.	13.
AL:MONTGOMERY	10/ 8/80	1.41	0.12	6.	7.	-5.	8.	-1.	7.
AL:MONTGOMERY	10/21/80	1.41	0.12	1.	7.	-3.	8.	-1.	7.
AL:MONTGOMERY	10/24/80	1.28	0.08	5.	5.	0.	6.	2.	5.
AL:MONTGOMERY	10/28/80	1.38	0.08	9.	5.	7.	6.	2.	5.
AL:MONTGOMERY	10/30/80	1.46	0.12	3.	7.	-1.	8.	2.	7.
AR:LITTLE ROCK	10/ 6/80	1.38	0.12	4.	7.	-5.	8.	9.	7.
AR:LITTLE ROCK	10/21/80	1.47	0.12	11.	7.	0.	8.	8.	7.
AR:LITTLE ROCK	10/24/80	1.44	0.12	5.	7.	9.	9.	3.	7.
AR:LITTLE ROCK	10/28/80	1.36	0.12	9.	7.	-6.	8.	6.	7.
AR:LITTLE ROCK	10/31/80	1.45	0.12	7.	7.	2.	9.	5.	7.
AZ:PHOENIX	10/ 9/80	1.44	0.12	2.	7.	1.	8.	-1.	7.
AZ:PHOENIX	10/21/80	1.41	0.12	3.	7.	-5.	9.	2.	7.
AZ:PHOENIX	10/24/80	1.36	0.14	4.	8.	4.	8.	2.	7.
AZ:PHOENIX	10/28/80	1.32	0.08	7.	5.	6.	6.	0.	5.
AZ:PHOENIX	10/30/80	1.58	0.12	3.	7.	-1.	9.	10.	7.
CA:LOS ANGELES	10/ 9/80	1.41	0.08	0.	5.	0.	6.	1.	5.
CA:LOS ANGELES	10/21/80	1.60	0.14	1.	8.	3.	8.	0.	7.
CA:LOS ANGELES	10/24/80	1.57	0.12	1.	7.	2.	9.	1.	7.
CA:LOS ANGELES	10/28/80	1.31	0.12	0.	7.	1.	8.	4.	7.
CA:LOS ANGELES	10/31/80	1.39	0.12	3.	7.	0.	8.	4.	7.
CA:SACRAMENTO	10/ 2/80	1.41	0.12	-2.	7.	-2.	8.	6.	7.
CA:SACRAMENTO	10/21/80	1.41	0.08	3.	5.	1.	6.	-2.	5.
CA:SACRAMENTO	10/24/80	1.40	0.14	12.	8.	6.	8.	6.	7.
CA:SACRAMENTO	10/28/80	1.53	0.12	4.	7.	-1.	9.	8.	7.
CA:SACRAMENTO	10/31/80	1.56	0.12	7.	7.	-9.	8.	1.	7.
CA:SAN FRANCISCO	10/ 9/80	1.43	0.12	-1.	7.	1.	8.	-1.	7.
CA:SAN FRANCISCO	10/21/80	1.41	0.12	1.	7.	-1.	8.	5.	7.
CA:SAN FRANCISCO	10/24/80	1.53	0.08	4.	5.	-2.	6.	4.	5.
CA:SAN FRANCISCO	10/29/80	1.56	0.14	5.	8.	5.	8.	-3.	7.
CA:SAN FRANCISCO	10/31/80	1.61	0.12	4.	7.	0.	9.	5.	7.
CO:DENVER	10/21/80	1.57	0.12	0.	7.	-4.	9.	-1.	7.
CO:DENVER	10/24/80	1.38	0.12	5.	7.	7.	8.	-5.	7.
CO:DENVER	10/27/80	1.40	0.12	5.	7.	4.	8.	0.	7.
CO:DENVER	10/30/80	1.44	0.12	7.	7.	4.	8.	-2.	7.
CT:HARTFORD	10/ 7/80	1.48	0.12	8.	7.	-3.	8.	1.	7.
CT:HARTFORD	10/22/80	1.39	0.08	2.	5.	-2.	6.	5.	5.
CT:HARTFORD	10/24/80	1.43	0.12	12.	7.	1.	8.	-1.	7.
CT:HARTFORD	10/29/80	1.26	0.12	14.	7.	13.	8.	5.	7.
CT:HARTFORD	10/31/80	1.39	0.12	11.	7.	10.	8.	2.	7.
DC:WASHINGTON	10/ 3/80	1.46	0.12	-1.	7.	-2.	8.	5.	7.
DC:WASHINGTON	10/24/80	1.37	0.14	4.	8.	4.	8.	5.	7.

TABLE 23 (CONTINUED)

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

LOCATION	DATE COLLECTED	K g/l	± e	^{137}Cs pCi/l	±e	^{140}Ba pCi/l	±e	^{131}I pCi/l	±e
DC:WASHINGTON	10/29/80	1.38	0.12	0.	7.	-4.	8.	4.	7.
DC:WASHINGTON	10/31/80	1.50	0.08	9.	5.	4.	6.	1.	5.
DE:WILMINGTON	10/ 3/80	1.46	0.12	-1.	7.	-2.	8.	-1.	7.
DE:WILMINGTON	10/23/80	1.35	0.08	2.	5.	-6.	6.	2.	5.
DE:WILMINGTON	10/28/80	1.57	0.14	3.	8.	2.	8.	4.	7.
DE:WILMINGTON	10/31/80	1.26	0.12	16.	7.	9.	8.	-6.	7.
FL:TAMPA	10/ 6/80	1.45	0.12	16.	7.	-3.	8.	6.	7.
FL:TAMPA	10/21/80	1.45	0.12	19.	7.	-6.	9.	1.	7.
FL:TAMPA	10/24/80	1.60	0.12	16.	7.	2.	9.	6.	7.
FL:TAMPA	10/28/80	1.41	0.14	19.	8.	2.	8.	6.	7.
FL:TAMPA	10/31/80	1.42	0.12	17.	7.	1.	8.	7.	7.
GA:ATLANTA	10/ 1/80	1.42	0.08	2.	5.	-1.	6.	2.	5.
GA:ATLANTA	10/15/80	1.32	0.12	1.	7.	-2.	8.	2.	7.
GA:ATLANTA	10/21/80	1.47	0.12	3.	7.	-3.	8.	2.	7.
GA:ATLANTA	10/24/80	1.36	0.22	5.	15.	-3.	20.	10.	13.
GA:ATLANTA	10/28/80	1.30	0.22	11.	15.	-13.	19.	11.	13.
GA:ATLANTA	10/31/80	1.29	0.12	0.	7.	0.	8.	6.	7.
HI:HONOLULU	10/ 7/80	1.39	0.12	5.	7.	-5.	8.	1.	7.
HI:HONOLULU	10/24/80	1.37	0.12	15.	7.	7.	8.	-4.	7.
HI:HONOLULU	10/24/80	1.67	0.13	12.	7.	4.	9.	5.	7.
HI:HONOLULU	10/28/80	1.44	0.12	15.	7.	0.	9.	5.	7.
HI:HONOLULU	10/31/80	1.55	0.10	14.	6.	6.	6.	2.	5.
IA:DES MOINES	10/ 6/80	1.45	0.12	0.	7.	-2.	8.	1.	7.
IA:DES MOINES	10/21/80	1.37	0.08	4.	5.	0.	6.	2.	5.
IA:DES MOINES	10/24/80	1.39	0.12	-3.	7.	5.	8.	2.	7.
IA:DES MOINES	10/28/80	1.43	0.12	-3.	7.	-2.	8.	3.	7.
IA:DES MOINES	10/31/80	1.53	0.08	-2.	5.	-2.	6.	4.	5.
ID:IDAHO FALLS	10/ 7/80	1.43	0.12	0.	7.	1.	8.	4.	7.
ID:IDAHO FALLS	10/21/80	1.38	0.12	7.	7.	1.	8.	-2.	7.
ID:IDAHO FALLS	10/24/80	1.66	0.23	2.	15.	-1.	20.	-1.	13.
ID:IDAHO FALLS	10/28/80	1.38	0.22	4.	15.	-10.	19.	5.	13.
ID:IDAHO FALLS	10/31/80	1.47	0.12	7.	7.	3.	8.	-3.	7.
IL:CHICAGO	10/ 6/80	1.36	0.12	5.	7.	-1.	8.	0.	7.
IL:CHICAGO	10/21/80	1.37	0.12	8.	7.	4.	8.	-7.	7.
IL:CHICAGO	10/24/80	1.35	0.22	0.	15.	-6.	19.	3.	13.
IL:CHICAGO	10/28/80	1.55	0.12	11.	7.	6.	9.	5.	7.
IL:CHICAGO	10/31/80	1.40	0.12	1.	7.	0.	8.	8.	7.
IN:INDIANAPOLIS	10/ 6/80	1.31	0.12	3.	7.	8.	8.	5.	7.
IN:INDIANAPOLIS	10/24/80	1.37	0.08	3.	5.	0.	6.	2.	5.
IN:INDIANAPOLIS	10/27/80	1.45	0.12	0.	7.	2.	9.	3.	7.
IN:INDIANAPOLIS	10/31/80	1.42	0.12	12.	7.	2.	8.	-1.	7.
KS:WICHITA	10/13/80	1.45	0.12	0.	7.	-5.	8.	0.	7.
KS:WICHITA	10/21/80	1.46	0.12	9.	7.	0.	9.	2.	7.
KS:WICHITA	10/24/80	1.57	0.08	2.	5.	0.	6.	2.	5.
KS:WICHITA	10/28/80	1.52	0.12	14.	7.	9.	8.	-5.	7.
KS:WICHITA	10/31/80	1.58	0.12	-1.	7.	-5.	9.	2.	7.
KY:LOUISVILLE	10/ 7/80	1.37	0.12	9.	7.	1.	8.	7.	7.

TABLE 23 (CONTINUED)

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

LOCATION	DATE COLLECTED	K g/l ± e		^{137}Cs pCi/l±e		^{140}Ba pCi/l±e		^{131}I pCi/l±e	
KY:LOUISVILLE	10/21/80	1.36	0.12	13.	7.	9.	8.	-4.	7.
KY:LOUISVILLE	10/24/80	1.50	0.12	4.	7.	-2.	9.	2.	7.
KY:LOUISVILLE	10/28/80	1.28	0.12	12.	7.	7.	8.	1.	7.
KY:LOUISVILLE	10/31/80	1.68	0.15	4.	8.	5.	8.	1.	7.
LA:NEW ORLEANS	10/ 2/80	1.36	0.12	8.	7.	0.	8.	0.	7.
LA:NEW ORLEANS	10/21/80	1.47	0.12	12.	7.	-1.	9.	5.	7.
LA:NEW ORLEANS	10/24/80	1.27	0.14	14.	8.	0.	8.	6.	7.
LA:NEW ORLEANS	10/28/80	1.33	0.12	2.	7.	3.	8.	1.	7.
LA:NEW ORLEANS	10/31/80	1.43	0.12	11.	7.	0.	8.	-4.	7.
MA:BOSTON	10/ 7/80	1.49	0.12	5.	7.	0.	8.	6.	7.
MA:BOSTON	10/21/80	1.62	0.14	6.	8.	3.	8.	0.	7.
MA:BOSTON	10/23/80	1.43	0.12	6.	7.	-4.	8.	2.	7.
MA:BOSTON	10/27/80	1.58	0.08	0.	5.	0.	6.	8.	5.
MA:BOSTON	10/30/80	1.34	0.12	4.	7.	-1.	8.	5.	7.
MD:BALTIMORE	10/ 3/80	1.40	0.12	5.	7.	-3.	8.	4.	7.
MD:BALTIMORE	10/21/80	1.47	0.12	1.	7.	0.	8.	3.	7.
MD:BALTIMORE	10/24/80	1.39	0.12	13.	7.	3.	8.	7.	7.
MD:BALTIMORE	10/27/80	1.55	0.12	4.	7.	0.	9.	3.	7.
MD:BALTIMORE	10/31/80	1.69	0.15	3.	8.	2.	8.	7.	7.
ME:PORTLAND	10/ 8/80	1.37	0.12	5.	7.	-1.	8.	-5.	7.
ME:PORTLAND	10/21/80	1.45	0.08	9.	5.	7.	6.	-12.	6.
ME:PORTLAND	10/24/80	1.46	0.12	0.	7.	2.	8.	1.	7.
ME:PORTLAND	10/28/80	1.56	0.12	5.	7.	-5.	9.	6.	7.
ME:PORTLAND	10/31/80	1.51	0.12	6.	7.	-4.	9.	1.	7.
MI:DETROIT	10/ 8/80	1.43	0.12	-1.	7.	-3.	8.	5.	7.
MI:DETROIT	10/21/80	1.60	0.12	0.	7.	-5.	9.	4.	7.
MI:DETROIT	10/23/80	1.33	0.12	-1.	7.	-2.	8.	8.	7.
MI:DETROIT	10/28/80	1.50	0.12	1.	7.	-2.	9.	1.	7.
MI:GRAND RAPIDS	10/ 6/80	1.31	0.12	3.	7.	-1.	8.	1.	7.
MI:GRAND RAPIDS	10/21/80	1.54	0.14	6.	8.	2.	8.	-1.	7.
MI:GRAND RAPIDS	10/28/80	1.33	0.12	5.	7.	5.	8.	0.	7.
MI:GRAND RAPIDS	10/31/80	1.40	0.12	4.	7.	-7.	8.	3.	7.
MN:MINN/ST. PAUL	10/ 4/80	1.42	0.08	0.	5.	2.	6.	4.	5.
MN:MINN/ST. PAUL	10/21/80	1.60	0.14	8.	8.	1.	8.	2.	7.
MN:MINN/ST. PAUL	10/24/80	1.56	0.12	10.	7.	4.	8.	-5.	7.
MN:MINN/ST. PAUL	10/24/80	1.35	0.14	15.	8.	2.	8.	7.	7.
MN:MINN/ST. PAUL	10/28/80	1.42	0.12	4.	7.	-6.	8.	2.	7.
MN:MINN/ST. PAUL	10/28/80	1.49	0.14	8.	8.	6.	8.	0.	7.
MN:MINN/ST. PAUL	10/30/80	1.40	0.12	0.	7.	0.	8.	0.	7.
MN:MINN/ST. PAUL	10/31/80	1.53	0.12	5.	7.	-1.	9.	2.	7.
MO:KANSAS CITY	10/ 9/80	1.34	0.12	2.	7.	-1.	8.	2.	7.
MO:KANSAS CITY	10/21/80	1.44	0.12	0.	7.	-5.	8.	2.	7.
MO:KANSAS CITY	10/24/80	1.68	0.13	2.	7.	-1.	9.	0.	7.
MO:KANSAS CITY	10/28/80	1.56	0.08	2.	5.	-2.	6.	3.	5.
MO:KANSAS CITY	10/31/80	1.38	0.12	1.	7.	-3.	8.	2.	7.
MO:ST. LOUIS	10/ 8/80	1.41	0.08	-1.	5.	2.	6.	1.	5.
MO:ST. LOUIS	10/21/80	1.49	0.12	-1.	7.	-4.	9.	0.	7.

TABLE 23 (CONTINUED)

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

LOCATION	DATE COLLECTED	K g/l ± e		^{137}Cs pCi/l±e		^{140}Ba pCi/l±e		^{131}I pCi/l±e	
MO:ST. LOUIS	10/24/80	1.51	0.22	8.	15.	-6.	19.	-1.	13.
MO:ST. LOUIS	10/28/80	1.42	0.12	-2.	7.	-2.	8.	1.	7.
MO:ST. LOUIS	10/31/80	1.54	0.14	2.	8.	0.	8.	4.	7.
MS:JACKSON	10/13/80	1.41	0.12	2.	7.	-1.	8.	-3.	7.
MS:JACKSON	10/21/80	1.51	0.12	2.	7.	-2.	8.	1.	7.
MS:JACKSON	10/24/80	1.28	0.12	6.	7.	-5.	8.	4.	7.
MS:JACKSON	10/28/80	1.43	0.12	7.	7.	5.	8.	-1.	7.
MS:JACKSON	10/31/80	1.32	0.08	10.	5.	5.	6.	-6.	5.
MT:HELENA	10/ 7/80	1.47	0.08	7.	5.	0.	6.	6.	5.
MT:HELENA	10/21/80	1.40	0.12	8.	7.	1.	8.	-3.	7.
MT:HELENA	10/24/80	1.57	0.12	2.	7.	1.	9.	2.	7.
MT:HELENA	10/28/80	1.42	0.14	12.	8.	4.	8.	9.	7.
MT:HELENA	10/31/80	1.27	0.22	-3.	15.	-2.	19.	5.	13.
NC:CHARLOTTE	10/ 6/80	1.40	0.22	7.	15.	-2.	20.	2.	13.
NC:CHARLOTTE	10/21/80	1.41	0.12	5.	7.	-1.	8.	1.	7.
NC:CHARLOTTE	10/24/80	1.50	0.12	3.	7.	4.	9.	2.	7.
NC:CHARLOTTE	10/28/80	1.38	0.12	1.	7.	-2.	8.	5.	7.
NC:CHARLOTTE	10/31/80	1.60	0.14	4.	8.	7.	8.	4.	7.
ND:MINOT	10/21/80	1.56	0.14	8.	8.	0.	8.	3.	7.
ND:MINOT	10/24/80	0.88	0.11	16.	7.	5.	8.	8.	7.
ND:MINOT	10/28/80	1.58	0.12	1.	7.	0.	9.	3.	7.
ND:MINOT	10/31/80	1.53	0.12	6.	7.	-1.	9.	1.	7.
NE:OMAHA	10/10/80	0.99	0.11	0.	7.	-6.	8.	4.	7.
NE:OMAHA	10/21/80	1.37	0.12	-2.	7.	2.	8.	2.	7.
NE:OMAHA	10/24/80	1.70	0.15	6.	8.	1.	8.	2.	7.
NE:OMAHA	10/27/80	1.28	0.12	6.	7.	-5.	8.	0.	7.
NE:OMAHA	10/31/80	1.44	0.12	4.	7.	-5.	8.	1.	7.
NH:MANCHESTER	10/ 6/80	1.35	0.12	4.	7.	-3.	8.	3.	7.
NJ:TRENTON	10/23/80	1.48	0.12	2.	7.	0.	9.	3.	7.
NJ:TRENTON	10/24/80	1.63	0.12	3.	7.	1.	9.	-1.	7.
NJ:TRENTON	10/28/80	1.43	0.12	4.	7.	-5.	8.	4.	7.
NJ:TRENTON	10/30/80	1.61	0.12	7.	7.	-4.	9.	8.	7.
NM:ALBUQUERQUE	10/ 6/80	1.40	0.08	5.	5.	-2.	6.	0.	5.
NM:ALBUQUERQUE	10/21/80	1.36	0.08	3.	5.	0.	6.	4.	5.
NM:ALBUQUERQUE	10/24/80	1.36	0.14	8.	8.	8.	8.	0.	7.
NM:ALBUQUERQUE	10/28/80	1.26	0.14	12.	8.	7.	8.	7.	7.
NM:ALBUQUERQUE	10/31/80	1.40	0.12	0.	7.	0.	8.	0.	7.
NV:LAS VEGAS	10/24/80	1.49	0.12	13.	7.	-5.	8.	4.	7.
NV:LAS VEGAS	10/28/80	1.52	0.12	5.	7.	-8.	9.	6.	7.
NV:LAS VEGAS	10/30/80	1.36	0.12	1.	7.	-8.	8.	4.	7.
NY:BUFFALO	10/ 6/80	1.31	0.12	1.	7.	0.	8.	1.	7.
NY:BUFFALO	10/21/80	1.41	0.12	9.	7.	6.	8.	0.	7.
NY:BUFFALO	10/24/80	1.51	0.10	5.	6.	5.	6.	2.	5.
NY:BUFFALO	10/28/80	1.56	0.12	1.	7.	-3.	9.	0.	7.
NY:BUFFALO	10/31/80	1.42	0.08	8.	5.	7.	6.	-9.	5.
NY:NEW YORK CITY	10/ 6/80	1.39	0.07	3.	4.	-2.	5.	2.	4.

TABLE 23 (CONTINUED)

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

LOCATION	DATE COLLECTED	K g/l ± e		^{137}Cs pCi/l±e		^{140}Ba pCi/l±e		^{131}I pCi/l±e	
NY:NEW YORK CITY	10/21/80	1.47	0.08	5.	5.	-2.	6.	4.	5.
NY:NEW YORK CITY	10/24/80	1.56	0.14	6.	8.	4.	8.	1.	7.
NY:NEW YORK CITY	10/28/80	1.63	0.14	4.	8.	1.	8.	4.	7.
NY:NEW YORK CITY	10/31/80	1.62	0.12	-2.	7.	1.	9.	3.	7.
NY:SYRACUSE	10/ 6/80	1.32	0.12	3.	7.	3.	8.	5.	7.
NY:SYRACUSE	10/21/80	1.37	0.14	8.	8.	4.	8.	6.	7.
NY:SYRACUSE	10/24/80	1.59	0.14	8.	8.	0.	8.	2.	7.
NY:SYRACUSE	10/28/80	1.53	0.08	0.	5.	-5.	6.	2.	5.
NY:SYRACUSE	10/31/80	1.55	0.12	1.	7.	1.	9.	6.	7.
OH:CINCINNATI	10/21/80	1.54	0.10	3.	5.	3.	6.	2.	5.
OH:CINCINNATI	10/24/80	1.30	0.12	16.	7.	8.	8.	0.	7.
OH:CINCINNATI	10/28/80	1.34	0.12	10.	7.	4.	8.	0.	7.
OH:CINCINNATI	10/31/80	1.44	0.08	5.	5.	5.	6.	-4.	5.
OH:CLEVELAND	10/ 7/80	1.40	0.12	2.	7.	0.	8.	4.	7.
OH:CLEVELAND	10/21/80	1.43	0.12	8.	7.	5.	8.	-7.	7.
OH:CLEVELAND	10/24/80	1.37	0.12	3.	7.	-4.	8.	0.	7.
OH:CLEVELAND	10/27/80	1.58	0.08	3.	5.	-2.	6.	3.	5.
OH:CLEVELAND	10/31/80	1.49	0.12	-2.	7.	-3.	8.	2.	7.
OK:OKLAHOMA CITY	10/ 6/80	1.40	0.12	4.	7.	-3.	8.	5.	7.
OK:OKLAHOMA CITY	10/21/80	1.39	0.12	3.	7.	8.	8.	-7.	7.
OK:OKLAHOMA CITY	10/24/80	1.45	0.12	6.	7.	3.	8.	0.	7.
OK:OKLAHOMA CITY	10/28/80	1.42	0.14	6.	8.	2.	8.	3.	7.
OK:OKLAHOMA CITY	10/31/80	1.58	0.08	4.	5.	1.	6.	0.	5.
OR:PORTLAND	10/21/80	1.37	0.08	-1.	5.	-2.	6.	1.	5.
OR:PORTLAND	10/24/80	1.60	0.14	10.	8.	5.	8.	-2.	7.
OR:PORTLAND	10/28/80	1.34	0.12	7.	7.	7.	8.	-3.	7.
OR:PORTLAND	10/31/80	1.55	0.10	6.	6.	6.	6.	0.	5.
PA:PHILADELPHIA	10/ 6/80	1.29	0.12	3.	7.	-4.	8.	3.	7.
PA:PHILADELPHIA	10/21/80	1.44	0.14	-1.	8.	10.	8.	1.	7.
PA:PHILADELPHIA	10/27/80	1.42	0.12	3.	7.	-3.	9.	5.	7.
PA:PITTSBURGH	10/ 8/80	1.42	0.12	0.	7.	-3.	8.	3.	7.
PA:PITTSBURGH	10/23/80	1.37	0.12	5.	7.	-9.	8.	1.	7.
PC:ANCON	10/30/80	1.34	0.12	2.	7.	0.	8.	0.	7.
PC:CRISTOBAL	10/16/80	1.33	0.12	9.	7.	5.	8.	-6.	7.
PC:CRISTOBAL	10/16/80	1.34	0.12	12.	7.	-1.	8.	3.	7.
PC:CRISTOBAL	10/21/80	1.43	0.14	14.	8.	6.	8.	2.	7.
PR:SAN JUAN	10/24/80	1.63	0.15	9.	8.	9.	9.	-2.	7.
PR:SAN JUAN	10/28/80	1.51	0.12	4.	7.	1.	9.	1.	7.
SC:CHARLESTON	10/15/80	1.23	0.21	8.	15.	-1.	20.	11.	13.
SC:CHARLESTON	10/21/80	1.20	0.21	9.	15.	-16.	19.	-4.	13.
SC:CHARLESTON	10/24/80	1.30	0.22	-3.	15.	-7.	19.	-3.	13.
SC:CHARLESTON	10/28/80	1.24	0.21	7.	15.	-1.	20.	9.	13.
SD:RAPID CITY	10/ 9/80	1.44	0.12	1.	7.	-7.	8.	4.	7.
SD:RAPID CITY	10/20/80	1.41	0.22	-1.	15.	-11.	19.	-1.	13.
SD:RAPID CITY	10/21/80	1.47	0.14	4.	8.	1.	8.	3.	7.
SD:RAPID CITY	10/24/80	1.55	0.12	7.	7.	1.	9.	-1.	7.
SD:RAPID CITY	10/24/80	1.49	0.14	5.	8.	1.	8.	6.	7.

TABLE 23 (CONTINUED)

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

LOCATION	DATE COLLECTED	K g/l ± e		^{137}Cs pCi/l±e		^{140}Ba pCi/l±e		^{131}I pCi/l±e	
SD:RAPID CITY	10/28/80	1.47	0.12	4.	7.	6.	8.	-2.	7.
SD:RAPID CITY	10/31/80	1.42	0.12	2.	7.	-9.	8.	4.	7.
TN:CHATTANOOGA	10/ 6/80	1.50	0.12	9.	7.	-1.	8.	2.	7.
TN:CHATTANOOGA	10/21/80	1.31	0.22	-1.	15.	-4.	19.	1.	13.
TN:CHATTANOOGA	10/23/80	1.20	0.21	20.	15.	3.	20.	3.	13.
TN:CHATTANOOGA	10/28/80	1.38	0.12	17.	7.	-3.	8.	-2.	7.
TN:CHATTANOOGA	10/31/80	1.31	0.12	1.	7.	-6.	8.	5.	7.
TN:KNOXVILLE	10/21/80	1.41	0.08	0.	5.	0.	6.	3.	5.
TN:KNOXVILLE	10/27/80	1.36	0.14	9.	8.	2.	8.	1.	7.
TN:KNOXVILLE	10/29/80	1.34	0.12	10.	7.	3.	8.	-4.	7.
TN:KNOXVILLE	10/31/80	1.61	0.14	7.	8.	3.	8.	2.	7.
TN:MEMPHIS	10/21/80	1.37	0.12	14.	7.	2.	8.	-3.	7.
TN:MEMPHIS	10/24/80	1.53	0.14	14.	8.	4.	8.	6.	7.
TN:MEMPHIS	10/28/80	1.38	0.14	13.	8.	2.	8.	9.	7.
TN:MEMPHIS	10/31/80	1.51	0.12	-2.	7.	-5.	8.	2.	7.
TX:AUSTIN	10/21/80	1.41	0.12	5.	7.	0.	8.	2.	7.
TX:AUSTIN	10/23/80	1.36	0.08	2.	5.	2.	6.	0.	5.
TX:FT. WORTH	10/28/80	1.38	0.08	14.	5.	0.	6.	0.	5.
TX:FT. WORTH	10/31/80	1.62	0.14	7.	8.	-1.	8.	4.	7.
UT:SALT LAKE CITY	10/ 6/80	1.41	0.12	4.	7.	-6.	8.	4.	7.
UT:SALT LAKE CITY	10/21/80	1.40	0.08	4.	5.	0.	6.	3.	5.
UT:SALT LAKE CITY	10/24/80	1.35	0.12	3.	7.	1.	8.	0.	7.
UT:SALT LAKE CITY	10/27/80	1.54	0.14	4.	8.	1.	8.	3.	7.
UT:SALT LAKE CITY	10/31/80	1.60	0.08	2.	5.	2.	6.	4.	5.
VA:NORFOLK	10/ 3/80	1.58	0.12	4.	7.	0.	8.	3.	7.
VA:NORFOLK	10/21/80	1.64	0.14	12.	8.	0.	8.	0.	7.
VA:NORFOLK	10/24/80	1.64	0.12	9.	7.	6.	8.	-4.	7.
VA:NORFOLK	10/28/80	1.56	0.12	1.	7.	0.	9.	0.	7.
VA:NORFOLK	10/31/80	1.70	0.11	7.	6.	3.	6.	-2.	5.
VT:BURLINGTON	10/ 6/80	1.55	0.08	9.	5.	-2.	6.	2.	5.
VT:BURLINGTON	10/21/80	1.44	0.12	9.	7.	5.	8.	-6.	7.
VT:BURLINGTON	10/24/80	1.43	0.12	5.	7.	-9.	9.	4.	7.
VT:BURLINGTON	10/28/80	1.44	0.14	6.	8.	4.	8.	-1.	7.
VT:BURLINGTON	10/31/80	1.38	0.08	7.	5.	6.	6.	-8.	5.
WA:SEATTLE	10/ 6/80	1.40	0.12	8.	7.	-2.	8.	1.	7.
WA:SEATTLE	10/21/80	1.34	0.12	-2.	7.	3.	8.	1.	7.
WA:SEATTLE	10/24/80	1.42	0.12	6.	7.	7.	8.	-6.	7.
WA:SEATTLE	10/28/80	1.58	0.14	5.	8.	4.	8.	5.	7.
WA:SPOKANE	10/ 7/80	1.39	0.08	2.	5.	-2.	6.	1.	5.
WA:SPOKANE	10/21/80	1.57	0.13	1.	7.	-6.	9.	2.	7.
WA:SPOKANE	10/28/80	1.38	0.10	8.	6.	4.	6.	6.	5.
WA:SPOKANE	10/30/80	1.45	0.12	2.	7.	-2.	8.	3.	7.
WI:MILWAUKEE	10/ 6/80	1.47	0.12	1.	7.	-5.	8.	5.	7.
WI:MILWAUKEE	10/21/80	1.57	0.12	4.	7.	-4.	9.	-3.	7.
WI:MILWAUKEE	10/24/80	1.38	0.12	8.	7.	6.	8.	-3.	7.
WI:MILWAUKEE	10/28/80	1.38	0.12	2.	7.	0.	8.	6.	7.
WI:MILWAUKEE	10/31/80	1.38	0.12	6.	7.	6.	8.	-3.	7.

TABLE 23 (CONTINUED)

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

LOCATION	DATE COLLECTED	K g/l ± e		^{137}Cs pCi/l±e		^{140}Ba pCi/l±e		^{131}I pCi/l±e	
WV:CHARLESTON	10/21/80	1.40	0.08	-2.	5.	-2.	6.	2.	5.
WV:CHARLESTON	10/24/80	1.40	0.12	5.	7.	1.	8.	2.	7.
WV:CHARLESTON	10/28/80	1.38	0.10	6.	6.	2.	6.	1.	5.
WV:CHARLESTON	10/31/80	1.36	0.12	5.	7.	3.	8.	-4.	7.
WY:LARAMIE	10/15/80	1.42	0.12	-2.	7.	-4.	8.	2.	7.

NS	NO SAMPLE
e	2 SIGMA COUNTING ERROR

TABLE 24

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

NOVEMBER 1980

LOCATION	DATE COLLECTED	K g/l	± e	^{137}Cs pCi/l	±e	^{140}Ba pCi/l	±e	^{131}I pCi/l	±e
AK:ANCHORAGE	11/ 4/80	1.56	0.14	10.	8.	9.	9.	3.	7.
AK:PALMER	11/ 7/80	1.40	0.22	6.	15.	-5.	19.	-7.	13.
AK:PALMER	11/10/80	1.60	0.12	4.	7.	2.	9.	-1.	7.
AK:PALMER	11/13/80	1.35	0.22	4.	15.	5.	20.	3.	13.
AK:PALMER	11/13/80	1.52	0.08	8.	5.	8.	6.	-5.	5.
AL:MONTGOMERY	11/ 4/80	1.56	0.14	9.	8.	4.	8.	2.	7.
AL:MONTGOMERY	11/ 7/80	1.53	0.12	0.	7.	1.	8.	4.	7.
AL:MONTGOMERY	11/10/80	1.58	0.12	5.	7.	-9.	9.	3.	7.
AL:MONTGOMERY	11/13/80	1.44	0.12	8.	7.	-3.	8.	1.	7.
AR:LITTLE ROCK	11/ 3/80	1.56	0.12	9.	7.	-1.	9.	9.	7.
AR:LITTLE ROCK	11/10/80	1.47	0.12	8.	7.	-7.	9.	3.	7.
AR:LITTLE ROCK	11/13/80	1.42	0.12	-4.	7.	-1.	8.	1.	7.
AR:LITTLE ROCK	11/17/80	1.36	0.14	6.	8.	1.	8.	8.	7.
AZ:PHOENIX	11/ 4/80	1.38	0.08	10.	5.	7.	6.	-7.	5.
AZ:PHOENIX	11/ 7/80	1.36	0.12	1.	7.	-1.	8.	2.	7.
AZ:PHOENIX	11/10/80	1.53	0.12	5.	7.	0.	9.	7.	7.
AZ:PHOENIX	11/12/80	1.59	0.10	5.	6.	2.	6.	0.	5.
AZ:PHOENIX	11/17/80	1.59	0.12	5.	7.	-7.	9.	6.	7.
CA:LOS ANGELES	11/ 4/80	1.45	0.12	10.	7.	3.	8.	0.	7.
CA:LOS ANGELES	11/ 7/80	1.46	0.12	2.	7.	-9.	8.	4.	7.
CA:LOS ANGELES	11/11/80	1.45	0.14	9.	8.	8.	8.	4.	7.
CA:LOS ANGELES	11/14/80	1.37	0.12	0.	7.	0.	8.	1.	7.
CA:LOS ANGELES	11/18/80	1.46	0.12	7.	7.	2.	9.	9.	7.
CA:SACRAMENTO	11/ 4/80	1.59	0.12	1.	7.	-2.	9.	1.	7.
CA:SACRAMENTO	11/ 7/80	1.60	0.14	4.	8.	-3.	8.	7.	7.
CA:SACRAMENTO	11/10/80	1.46	0.08	2.	5.	-2.	6.	2.	5.
CA:SACRAMENTO	11/13/80	1.37	0.12	1.	7.	2.	8.	4.	7.
CA:SACRAMENTO	11/17/80	1.41	0.12	16.	7.	2.	8.	3.	7.
CA:SAN FRANCISCO	11/ 4/80	1.48	0.12	3.	7.	0.	9.	6.	7.
CA:SAN FRANCISCO	11/ 7/80	1.46	0.12	2.	7.	-3.	8.	2.	7.
CA:SAN FRANCISCO	11/10/80	1.55	0.12	12.	7.	3.	8.	-2.	7.
CA:SAN FRANCISCO	11/13/80	1.50	0.12	-1.	7.	-2.	9.	4.	7.
CO:DENVER	11/ 7/80	1.29	0.12	13.	7.	5.	8.	-2.	7.
CO:DENVER	11/10/80	1.74	0.15	0.	8.	7.	8.	3.	7.
CO:DENVER	11/12/80	1.62	0.12	-1.	7.	4.	9.	5.	7.
CO:DENVER	11/14/80	1.44	0.12	1.	7.	0.	8.	-1.	7.
CO:DENVER	11/26/80	1.40	0.12	-1.	7.	-1.	8.	2.	7.
CT:HARTFORD	11/ 5/80	1.57	0.14	2.	8.	5.	8.	5.	7.
CT:HARTFORD	11/ 7/80	1.68	0.15	5.	8.	6.	8.	2.	7.
CT:HARTFORD	11/10/80	1.54	0.08	9.	5.	0.	6.	6.	5.
CT:HARTFORD	11/13/80	1.37	0.12	3.	7.	-4.	8.	6.	7.
DC:WASHINGTON	11/ 5/80	1.33	0.12	8.	7.	4.	8.	-1.	7.
DC:WASHINGTON	11/11/80	1.41	0.12	4.	7.	2.	8.	1.	7.
DC:WASHINGTON	11/14/80	1.59	0.14	9.	8.	8.	9.	9.	7.
DE:WILMINGTON	11/ 5/80	1.48	0.14	6.	8.	6.	8.	10.	7.

TABLE 24 (CONTINUED)

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

	DATE	K		^{137}Cs		^{140}Ba		^{131}I	
LOCATION	COLLECTED	g/l ± e		pCi/l±e		pCi/l±e		pCi/l±e	
DE:WILMINGTON	11/ 7/80	1.43	0.12	-3.	7.	1.	8.	0.	7.
DE:WILMINGTON	11/10/80	1.46	0.14	5.	8.	1.	8.	3.	7.
DE:WILMINGTON	11/13/80	1.31	0.12	1.	7.	4.	8.	-1.	7.
DE:WILMINGTON	11/17/80	1.45	0.12	7.	7.	-4.	9.	5.	7.
FL:TAMPA	11/ 4/80	1.51	0.14	21.	8.	9.	9.	4.	7.
FL:TAMPA	11/ 7/80	1.39	0.22	15.	15.	-18.	19.	-1.	13.
FL:TAMPA	11/10/80	1.33	0.12	17.	7.	-6.	8.	0.	7.
FL:TAMPA	11/13/80	1.43	0.22	16.	15.	1.	20.	-5.	13.
GA:ATLANTA	11/ 4/80	1.38	0.12	-1.	7.	-2.	8.	8.	7.
GA:ATLANTA	11/ 7/80	1.31	0.12	7.	7.	2.	8.	1.	7.
GA:ATLANTA	11/10/80	1.32	0.12	13.	7.	5.	8.	-6.	7.
GA:ATLANTA	11/13/80	1.72	0.15	12.	8.	-1.	8.	4.	7.
GA:ATLANTA	11/24/80	1.52	0.12	8.	7.	-9.	8.	1.	7.
HI:HONOLULU	11/ 3/80	1.50	0.14	8.	8.	3.	8.	3.	7.
HI:HONOLULU	11/ 7/80	1.33	0.12	8.	7.	-1.	8.	2.	7.
HI:HONOLULU	11/10/80	1.47	0.12	5.	7.	-5.	8.	6.	7.
HI:HONOLULU	11/24/80	1.43	0.12	3.	7.	-2.	8.	1.	7.
IA:DES MOINES	11/ 4/80	1.42	0.12	7.	7.	5.	8.	-2.	7.
IA:DES MOINES	11/ 7/80	1.38	0.12	-2.	7.	1.	8.	5.	7.
IA:DES MOINES	11/10/80	1.51	0.12	1.	7.	-3.	8.	-3.	7.
IA:DES MOINES	11/13/80	1.28	0.08	1.	5.	0.	6.	0.	5.
ID:IDAHO FALLS	11/ 4/80	1.55	0.08	-2.	5.	-2.	6.	4.	5.
ID:IDAHO FALLS	11/ 7/80	1.37	0.12	6.	7.	-2.	8.	1.	7.
ID:IDAHO FALLS	11/10/80	1.46	0.08	12.	5.	4.	6.	2.	5.
ID:IDAHO FALLS	11/13/80	1.38	0.12	0.	7.	0.	9.	7.	7.
IL:CHICAGO	11/ 5/80	1.49	0.12	-3.	7.	-4.	9.	2.	7.
IL:CHICAGO	11/ 7/80	1.52	0.14	6.	8.	2.	8.	8.	7.
IL:CHICAGO	11/10/80	1.61	0.14	7.	8.	6.	8.	-1.	7.
IL:CHICAGO	11/13/80	1.47	0.12	1.	7.	-7.	8.	1.	7.
IN:INDIANAPOLIS	11/ 3/80	1.59	0.12	5.	7.	0.	9.	5.	7.
IN:INDIANAPOLIS	11/ 7/80	1.37	0.08	4.	5.	5.	6.	5.	5.
IN:INDIANAPOLIS	11/10/80	1.29	0.12	8.	7.	6.	8.	-2.	7.
IN:INDIANAPOLIS	11/14/80	1.37	0.12	10.	7.	9.	8.	-2.	7.
KS:WICHITA	11/ 4/80	1.42	0.12	12.	7.	4.	8.	-2.	7.
KS:WICHITA	11/ 7/80	1.32	0.12	-1.	7.	2.	8.	5.	7.
KS:WICHITA	11/10/80	1.41	0.14	5.	8.	2.	8.	8.	7.
KS:WICHITA	11/13/80	1.53	0.12	4.	7.	1.	9.	7.	7.
KY:LOUISVILLE	11/ 3/80	1.49	0.10	6.	6.	5.	6.	4.	5.
KY:LOUISVILLE	11/ 7/80	1.50	0.14	7.	8.	5.	8.	7.	7.
KY:LOUISVILLE	11/10/80	1.47	0.12	7.	7.	5.	8.	0.	7.
KY:LOUISVILLE	11/13/80	1.51	0.12	7.	7.	5.	8.	-3.	7.
LA:NEW ORLEANS	11/ 3/80	1.46	0.12	7.	7.	-5.	9.	9.	7.
LA:NEW ORLEANS	11/ 7/80	1.24	0.12	5.	7.	-4.	8.	3.	7.
LA:NEW ORLEANS	11/10/80	1.35	0.14	7.	8.	4.	8.	9.	7.
LA:NEW ORLEANS	11/14/80	1.35	0.12	14.	7.	9.	8.	2.	7.
MA:BOSTON	11/ 3/80	1.44	0.12	10.	7.	7.	8.	-3.	7.
MA:BOSTON	11/ 6/80	1.68	0.15	0.	8.	6.	8.	-21.	12.

TABLE 24 (CONTINUED)

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

NOVEMBER 1980

LOCATION	DATE COLLECTED	K g/l ± e	^{137}Cs pCi/l±e	^{140}Ba pCi/l±e	^{131}I pCi/l±e
MA:BOSTON	11/10/80	1.43 0.12	16. 7.	4. 8.	3. 7.
MA:BOSTON	11/13/80	1.58 0.08	6. 5.	-2. 6.	-2. 5.
MD:BALTIMORE	11/ 7/80	1.42 0.08	0. 5.	0. 6.	0. 5.
MD:BALTIMORE	11/10/80	1.67 0.12	3. 7.	-4. 9.	4. 7.
MD:BALTIMORE	11/14/80	1.40 0.12	6. 7.	0. 8.	0. 7.
MD:BALTIMORE	11/21/80	1.44 0.12	3. 7.	-6. 8.	4. 7.
ME:PORTLAND	11/ 4/80	1.43 0.22	9. 15.	0. 20.	-1. 13.
ME:PORTLAND	11/ 7/80	1.49 0.09	6. 5.	6. 6.	2. 5.
ME:PORTLAND	11/10/80	1.48 0.12	3. 7.	-5. 9.	9. 7.
ME:PORTLAND	11/13/80	1.36 0.12	7. 7.	-1. 8.	0. 7.
MI:DETROIT	11/ 3/80	1.56 0.08	4. 5.	-2. 6.	0. 5.
MI:DETROIT	11/ 5/80	1.48 0.12	-1. 7.	1. 8.	-4. 7.
MI:DETROIT	11/12/80	1.56 0.12	3. 7.	-4. 9.	8. 7.
MI:DETROIT	11/13/80	1.49 0.14	4. 8.	5. 8.	6. 7.
MI:GRAND RAPIDS	11/ 4/80	1.39 0.12	2. 7.	-2. 8.	6. 7.
MI:GRAND RAPIDS	11/ 7/80	1.33 0.12	-4. 7.	2. 8.	-2. 7.
MI:GRAND RAPIDS	11/10/80	1.48 0.12	3. 7.	-1. 9.	7. 7.
MI:GRAND RAPIDS	11/13/80	1.37 0.12	7. 7.	8. 8.	-1. 7.
MN:MINN/ST. PAUL	11/ 4/80	1.36 0.12	1. 7.	3. 8.	-3. 7.
MN:MINN/ST. PAUL	11/ 4/80	1.13 0.11	14. 7.	5. 8.	2. 7.
MN:MINN/ST. PAUL	11/ 6/80	1.44 0.12	8. 7.	-5. 8.	0. 7.
MN:MINN/ST. PAUL	11/ 7/80	1.56 0.12	5. 7.	1. 9.	2. 7.
MN:MINN/ST. PAUL	11/10/80	1.50 0.10	9. 6.	3. 6.	7. 5.
MN:MINN/ST. PAUL	11/10/80	1.37 0.14	13. 8.	2. 8.	8. 7.
MN:MINN/ST. PAUL	11/12/80	1.35 0.08	12. 5.	6. 6.	1. 5.
MN:MINN/ST. PAUL	11/13/80	1.34 0.12	3. 7.	-4. 8.	1. 7.
MO:KANSAS CITY	11/ 4/80	1.42 0.12	10. 7.	7. 8.	0. 7.
MO:KANSAS CITY	11/ 7/80	1.39 0.08	0. 5.	-4. 6.	7. 5.
MO:KANSAS CITY	11/10/80	1.54 0.12	4. 7.	-7. 9.	5. 7.
MO:KANSAS CITY	11/13/80	1.65 0.15	7. 8.	2. 8.	4. 7.
MO:ST. LOUIS	11/ 3/80	1.49 0.08	9. 5.	9. 6.	-1. 5.
MO:ST. LOUIS	11/ 7/80	1.50 0.12	1. 7.	6. 9.	-4. 7.
MO:ST. LOUIS	11/10/80	1.47 0.12	9. 7.	5. 8.	-5. 7.
MO:ST. LOUIS	11/13/80	1.39 0.12	4. 7.	2. 8.	2. 7.
MS:JACKSON	11/ 4/80	1.70 0.15	5. 8.	6. 8.	9. 7.
MS:JACKSON	11/ 7/80	1.36 0.12	3. 7.	1. 8.	-2. 7.
MS:JACKSON	11/10/80	1.42 0.12	0. 7.	-4. 8.	0. 7.
MS:JACKSON	11/13/80	1.54 0.08	6. 5.	4. 6.	7. 5.
MT:HELENA	11/ 3/80	1.57 0.08	6. 5.	2. 6.	4. 5.
MT:HELENA	11/ 7/80	1.59 0.12	0. 7.	-2. 9.	8. 7.
MT:HELENA	11/10/80	1.62 0.12	4. 7.	-2. 9.	8. 7.
MT:HELENA	11/13/80	1.53 0.08	7. 5.	3. 6.	0. 5.
NC:CHARLOTTE	11/ 4/80	1.43 0.12	11. 7.	10. 8.	-4. 7.
NC:CHARLOTTE	11/ 7/80	1.51 0.14	8. 8.	-1. 8.	5. 7.
NC:CHARLOTTE	11/10/80	1.38 0.12	7. 7.	-2. 8.	5. 7.

TABLE 24 (CONTINUED)

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

NOVEMBER 1980

LOCATION	DATE COLLECTED	K g/l ± e		^{137}Cs pCi/l±e		^{140}Ba pCi/l±e		^{131}I pCi/l±e	
NC:CHARLOTTE	11/13/80	1.59	0.14	9.	8.	7.	8.	5.	7.
ND:MINOT	11/ 4/80	1.41	0.12	2.	7.	-4.	8.	8.	7.
ND:MINOT	11/ 7/80	1.45	0.12	0.	7.	-2.	8.	2.	7.
ND:MINOT	11/14/80	1.71	0.15	9.	8.	2.	8.	4.	7.
ND:MINOT	11/17/80	1.63	0.12	1.	7.	0.	9.	5.	7.
NE:OMAHA	11/ 4/80	1.42	0.14	12.	8.	4.	8.	3.	7.
NE:OMAHA	11/ 7/80	1.26	0.14	0.	7.	4.	8.	1.	7.
NE:OMAHA	11/10/80	1.44	0.08	5.	5.	-4.	6.	2.	5.
NE:OMAHA	11/13/80	1.33	0.12	1.	7.	0.	8.	-3.	7.
NH:MANCHESTER	11/ 3/80	1.66	0.10	5.	6.	4.	6.	0.	5.
NH:MANCHESTER	11/10/80	1.48	0.14	5.	8.	3.	8.	6.	7.
NH:MANCHESTER	11/13/80	1.51	0.14	6.	8.	0.	8.	4.	7.
NJ:TRENTON	11/ 3/80	1.22	0.08	13.	5.	6.	6.	-1.	5.
NJ:TRENTON	11/ 6/80	1.37	0.12	1.	7.	-4.	8.	4.	7.
NJ:TRENTON	11/13/80	1.54	0.12	9.	7.	1.	9.	3.	7.
NJ:TRENTON	11/20/80	1.39	0.12	1.	7.	2.	8.	-1.	7.
NM:ALBUQUERQUE	11/ 3/80	1.38	0.12	9.	7.	6.	8.	2.	7.
NM:ALBUQUERQUE	11/ 7/80	1.46	0.12	2.	7.	-2.	9.	1.	7.
NM:ALBUQUERQUE	11/10/80	1.29	0.12	6.	7.	3.	8.	1.	7.
NM:ALBUQUERQUE	11/13/80	1.28	0.12	4.	7.	-2.	8.	0.	7.
NM:ALBUQUERQUE	11/17/80	1.23	0.14	9.	8.	-4.	8.	7.	7.
NV:LAS VEGAS	11/ 7/80	1.50	0.08	1.	5.	-3.	6.	6.	5.
NV:LAS VEGAS	11/13/80	1.40	0.12	2.	7.	-8.	8.	2.	7.
NV:LAS VEGAS	11/18/80	1.23	0.12	11.	7.	9.	8.	3.	7.
NY:BUFFALO	11/ 4/80	1.47	0.12	0.	7.	-4.	8.	2.	7.
NY:BUFFALO	11/ 7/80	1.60	0.10	8.	6.	2.	6.	3.	5.
NY:BUFFALO	11/10/80	1.48	0.12	9.	7.	4.	8.	-6.	7.
NY:BUFFALO	11/13/80	1.38	0.12	2.	7.	-1.	8.	3.	7.
NY:NEW YORK CITY	11/ 3/80	1.34	0.12	8.	7.	9.	8.	1.	7.
NY:NEW YORK CITY	11/ 5/80	1.45	0.14	4.	8.	1.	8.	3.	7.
NY:NEW YORK CITY	11/ 7/80	1.46	0.12	8.	7.	-1.	8.	1.	7.
NY:NEW YORK CITY	11/ 8/80	1.40	0.08	1.	5.	-4.	6.	1.	5.
NY:NEW YORK CITY	11/13/80	1.71	0.15	5.	8.	9.	9.	3.	7.
NY:SYRACUSE	11/ 3/80	1.39	0.12	9.	7.	7.	8.	-2.	7.
NY:SYRACUSE	11/ 5/80	1.30	0.12	12.	7.	5.	8.	-5.	7.
NY:SYRACUSE	11/ 7/80	1.42	0.14	5.	8.	4.	8.	4.	7.
NY:SYRACUSE	11/10/80	1.53	0.12	6.	7.	2.	9.	6.	7.
NY:SYRACUSE	11/13/80	1.71	0.15	2.	8.	3.	8.	1.	7.
OH:CINCINNATI	11/ 4/80	1.53	0.14	12.	8.	6.	8.	4.	7.
OH:CINCINNATI	11/ 7/80	1.41	0.12	1.	7.	-8.	8.	-1.	7.
OH:CINCINNATI	11/10/80	1.50	0.08	2.	5.	2.	6.	3.	5.
OH:CINCINNATI	11/13/80	1.39	0.12	2.	7.	1.	8.	1.	7.
OH:CLEVELAND	11/ 7/80	1.25	0.12	11.	7.	1.	8.	-2.	7.
OH:CLEVELAND	11/10/80	1.44	0.14	3.	8.	4.	8.	6.	7.
OH:CLEVELAND	11/13/80	1.46	0.12	2.	7.	-4.	8.	-1.	7.

TABLE 24 (CONTINUED)

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

NOVEMBER 1980

LOCATION	DATE COLLECTED	K g/l ± e	^{137}Cs pCi/l±e	^{140}Ba pCi/l±e	^{131}I pCi/l±e
OK:OKLAHOMA CITY	11/ 3/80	1.61 0.09	2. 5.	5. 6.	6. 5.
OK:OKLAHOMA CITY	11/ 6/80	1.48 0.22	10. 15.	11. 20.	8. 13.
OK:OKLAHOMA CITY	11/10/80	1.30 0.22	3. 15.	-13. 19.	-3. 13.
OK:OKLAHOMA CITY	11/12/80	1.36 0.12	-2. 7.	2. 8.	-2. 7.
OK:OKLAHOMA CITY	11/17/80	1.38 0.22	5. 15.	-11. 19.	9. 13.
OR:PORTLAND	11/ 4/80	1.50 0.14	6. 8.	9. 8.	2. 7.
OR:PORTLAND	11/ 7/80	1.52 0.08	1. 5.	-2. 6.	5. 5.
OR:PORTLAND	11/10/80	1.20 0.12	6. 7.	8. 8.	1. 7.
OR:PORTLAND	11/13/80	1.40 0.12	0. 7.	-3. 8.	2. 7.
PA:PHILADELPHIA	11/ 3/80	1.46 0.14	2. 8.	2. 8.	7. 7.
PA:PHILADELPHIA	11/13/80	1.47 0.12	-1. 7.	-2. 8.	2. 7.
PA:PITTSBURGH	11/ 5/80	1.58 0.12	-1. 7.	-7. 9.	1. 7.
PA:PITTSBURGH	11/13/80	1.65 0.12	10. 7.	2. 9.	10. 7.
PC:CRISTOBAL	11/ 4/80	1.34 0.12	10. 7.	0. 8.	1. 7.
PC:CRISTOBAL	11/10/80	1.49 0.14	19. 8.	1. 8.	6. 7.
PR:SAN JUAN	11/14/80	1.51 0.08	4. 5.	-2. 6.	2. 5.
SC:CHARLESTON	11/ 3/80	0.65 0.10	5. 7.	-10. 8.	4. 7.
SC:CHARLESTON	11/ 6/80	1.43 0.12	7. 7.	-3. 8.	3. 7.
SC:CHARLESTON	11/10/80	1.43 0.12	3. 7.	-7. 8.	7. 7.
SC:CHARLESTON	11/13/80	1.44 0.12	5. 7.	2. 9.	5. 7.
SD:RAPID CITY	11/ 4/80	1.65 0.15	8. 8.	1. 8.	2. 7.
SD:RAPID CITY	11/ 7/80	1.36 0.08	10. 5.	0. 6.	-2. 5.
SD:RAPID CITY	11/10/80	1.71 0.13	0. 7.	-2. 9.	0. 7.
SD:RAPID CITY	11/14/80	1.37 0.12	-1. 7.	2. 8.	4. 7.
SD:RAPID CITY	11/19/80	1.44 0.12	2. 7.	-2. 9.	9. 7.
TN:CHATTANOOGA	11/ 3/80	1.53 0.12	3. 7.	1. 9.	4. 7.
TN:CHATTANOOGA	11/ 4/80	1.55 0.12	5. 7.	-2. 9.	5. 7.
TN:CHATTANOOGA	11/ 7/80	1.49 0.12	5. 7.	-5. 8.	3. 7.
TN:CHATTANOOGA	11/10/80	1.36 0.12	3. 7.	3. 8.	2. 7.
TN:CHATTANOOGA	11/13/80	1.57 0.12	7. 7.	6. 8.	-2. 7.
TN:KNOXVILLE	11/ 4/80	1.40 0.12	16. 7.	3. 8.	3. 7.
TN:KNOXVILLE	11/ 7/80	1.58 0.10	9. 6.	3. 6.	4. 5.
TN:KNOXVILLE	11/12/80	1.41 0.12	-2. 7.	-1. 8.	6. 7.
TN:KNOXVILLE	11/13/80	1.36 0.12	3. 7.	-5. 8.	5. 7.
TN:MEMPHIS	11/ 3/80	1.35 0.12	6. 7.	0. 8.	0. 7.
TN:MEMPHIS	11/ 6/80	1.29 0.12	12. 7.	6. 8.	1. 7.
TN:MEMPHIS	11/10/80	1.56 0.10	11. 6.	0. 6.	6. 5.
TN:MEMPHIS	11/13/80	1.36 0.12	2. 7.	-7. 8.	7. 7.
TX:AUSTIN	11/ 4/80	1.34 0.12	0. 7.	-2. 8.	2. 7.
TX:AUSTIN	11/ 7/80	1.50 0.08	4. 5.	-3. 6.	8. 5.
TX:AUSTIN	11/10/80	1.58 0.14	3. 8.	2. 8.	7. 7.
TX:AUSTIN	11/16/80	1.42 0.12	-1. 7.	-3. 8.	2. 7.
TX:FT. WORTH	11/14/80	1.52 0.10	4. 6.	2. 6.	4. 5.

TABLE 24 (CONTINUED)

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

NOVEMBER 1980

	DATE	K		^{137}Cs		^{140}Ba		^{131}I	
LOCATION	COLLECTED	g/l ± e		pCi/l±e		pCi/l±e		pCi/l±e	
UT:SALT LAKE CITY	11/ 4/80	1.52	0.14	10.	8.	2.	8.	2.	7.
UT:SALT LAKE CITY	11/ 7/80	1.47	0.12	-1.	7.	-1.	8.	3.	7.
UT:SALT LAKE CITY	11/10/80	1.36	0.08	12.	5.	7.	6.	-2.	5.
UT:SALT LAKE CITY	11/13/80	1.45	0.12	-1.	7.	-1.	8.	3.	7.
VA:NORFOLK	11/ 4/80	1.65	0.12	4.	7.	-4.	9.	4.	7.
VA:NORFOLK	11/ 7/80	1.41	0.12	1.	7.	1.	8.	-3.	7.
VA:NORFOLK	11/10/80	1.68	0.13	5.	7.	1.	9.	5.	7.
VA:NORFOLK	11/13/80	1.56	0.09	8.	5.	-2.	6.	6.	5.
VA:NORFOLK	11/17/80	1.47	0.12	1.	7.	-7.	8.	8.	7.
VT:BURLINGTON	11/ 5/80	1.34	0.12	4.	7.	0.	8.	4.	7.
VT:BURLINGTON	11/10/80	1.25	0.12	15.	7.	3.	8.	2.	7.
VT:BURLINGTON	11/13/80	1.78	0.15	7.	8.	4.	8.	-1.	7.
VT:BURLINGTON	11/17/80	1.26	0.12	17.	7.	1.	8.	3.	7.
WA:SEATTLE	11/ 6/80	1.38	0.12	1.	7.	-3.	8.	6.	7.
WA:SEATTLE	11/10/80	1.39	0.12	8.	7.	4.	8.	5.	7.
WA:SEATTLE	11/14/80	1.60	0.12	3.	7.	1.	9.	0.	7.
WA:SPOKANE	11/ 4/80	1.53	0.12	-1.	7.	-5.	9.	2.	7.
WA:SPOKANE	11/ 6/80	1.56	0.12	7.	7.	0.	9.	1.	7.
WA:SPOKANE	11/12/80	1.51	0.12	4.	7.	-1.	8.	2.	7.
WA:SPOKANE	11/14/80	1.57	0.12	3.	7.	4.	8.	-4.	7.
WI:MILWAUKEE	11/ 4/80	1.50	0.14	10.	8.	1.	8.	4.	7.
WI:MILWAUKEE	11/ 7/80	1.55	0.14	7.	8.	2.	8.	2.	7.
WI:MILWAUKEE	11/10/80	1.47	0.12	1.	7.	2.	9.	4.	7.
WI:MILWAUKEE	11/13/80	1.48	0.12	1.	7.	-5.	9.	8.	7.
WV:CHARLESTON	11/ 5/80	1.41	0.12	4.	7.	1.	9.	5.	7.
WV:CHARLESTON	11/ 7/80	1.35	0.12	-1.	7.	3.	8.	2.	7.
WV:CHARLESTON	11/10/80	1.28	0.08	11.	5.	10.	6.	1.	5.
WV:CHARLESTON	11/13/80	1.39	0.12	15.	7.	8.	8.	1.	7.

NS NO SAMPLE
e 2 SIGMA COUNTING ERROR

TABLE 25

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

DECEMBER 1980

LOCATION	DATE COLLECTED	K g/l ± e		^{137}Cs pCi/l±e		^{140}Ba pCi/l±e		^{131}I pCi/l±e	
AK:PALMER	12/ 2/80	1.40	0.12	5.	7.	-5.	8.	1.	7.
AL:MONTGOMERY	12/11/80	1.42	0.12	-2.	7.	-6.	8.	3.	7.
CA:LOS ANGELES	12/ 2/80	1.41	0.12	1.	7.	3.	8.	2.	7.
CA:SACRAMENTO	12/ 3/80	1.40	0.22	9.	15.	-21.	19.	11.	13.
CA:SAN FRANCISCO	12/ 4/80	1.41	0.12	2.	7.	-1.	8.	1.	7.
CO:DENVER	12/30/80	1.38	0.12	1.	7.	0.	8.	2.	7.
CT:HARTFORD	12/ 1/80	1.37	0.12	6.	7.	-8.	8.	0.	7.
DC:WASHINGTON	12/ 5/80	1.43	0.12	-1.	7.	-3.	8.	1.	7.
DE:WILMINGTON	12/ 9/80	1.31	0.12	3.	7.	4.	8.	6.	7.
HI:HONOLULU	12/ 2/80	1.45	0.08	5.	5.	-3.	6.	2.	5.
IA:DES MOINES	12/ 1/80	1.49	0.12	5.	7.	-5.	8.	5.	7.
ID:IDAHO FALLS	12/ 8/80	1.55	0.22	20.	15.	7.	20.	12.	13.
IL:CHICAGO	12/ 1/80	1.29	0.12	4.	7.	-9.	8.	2.	7.
IN:INDIANAPOLIS	12/ 8/80	1.39	0.12	7.	7.	-7.	8.	0.	7.
KS:WICHITA	12/ 8/80	1.42	0.08	7.	5.	-2.	6.	0.	5.
KY:LOUISVILLE	12/ 2/80	1.46	0.12	-1.	7.	0.	8.	6.	7.
MA:BOSTON	12/ 9/80	1.51	0.12	9.	7.	3.	8.	6.	7.
MD:BALTIMORE	12/ 1/80	1.45	0.12	4.	7.	-5.	8.	5.	7.
ME:PORTLAND	12/ 1/80	1.23	0.21	4.	15.	-23.	19.	7.	13.
MI:DETROIT	12/10/80	1.39	0.12	2.	7.	3.	8.	2.	7.
MI:GRAND RAPIDS	12/ 1/80	1.35	0.08	4.	5.	-7.	6.	2.	5.
MN:MINN/ST. PAUL	12/ 3/80	1.29	0.12	4.	7.	0.	8.	4.	7.
MO:KANSAS CITY	12/12/80	1.40	0.12	2.	7.	-2.	8.	-2.	7.
MO:ST. LOUIS	12/ 3/80	1.48	0.12	3.	7.	-3.	8.	6.	7.
MS:JACKSON	12/ 8/80	1.40	0.12	1.	7.	-4.	8.	3.	7.
MT:HELENA	12/ 1/80	1.40	0.12	3.	7.	7.	8.	2.	7.
NC:CHARLOTTE	12/ 1/80	1.45	0.22	1.	15.	-5.	19.	6.	13.
ND:MINOT	12/16/80	1.47	0.08	-2.	5.	-7.	6.	1.	5.
NE:OMAHA	12/12/80	1.44	0.12	1.	7.	0.	8.	8.	7.
NH:MANCHESTER	12/ 1/80	1.34	0.12	8.	7.	0.	8.	3.	7.
NJ:TRENTON	12/ 4/80	1.40	0.08	6.	5.	2.	6.	5.	5.
NM:ALBUQUERQUE	12/ 8/80	1.33	0.12	-3.	7.	-1.	8.	8.	7.
NY:BUFFALO	12/ 8/80	1.54	0.12	1.	7.	1.	8.	-3.	7.
NY:NEW YORK CITY	12/ 1/80	1.53	0.12	-2.	7.	-1.	8.	0.	7.
NY:SYRACUSE	12/11/80	1.50	0.12	7.	7.	-2.	8.	3.	7.
OH:CINCINNATI	12/ 1/80	1.38	0.12	0.	7.	-6.	8.	3.	7.
OH:CLEVELAND	12/ 7/80	1.35	0.12	4.	7.	-1.	8.	0.	7.
OK:OKLAHOMA CITY	12/ 1/80	1.41	0.22	12.	15.	-9.	19.	11.	13.
OR:PORTLAND	12/ 1/80	1.37	0.12	2.	7.	-7.	8.	5.	7.
PA:PHILADELPHIA	12/ 8/80	1.45	0.08	0.	5.	-2.	6.	4.	5.
PA:PITTSBURGH	12/10/80	1.45	0.12	0.	7.	-1.	8.	4.	7.
PC:CRISTOBAL	12/18/80	1.30	0.12	1.	7.	3.	8.	-3.	7.
PR:SAN JUAN	12/12/80	1.43	0.12	2.	7.	1.	8.	0.	7.
TN:CHATTANOOGA	12/ 8/80	1.43	0.08	5.	5.	-2.	6.	5.	5.
TN:KNOXVILLE	12/10/80	1.44	0.12	5.	7.	0.	8.	5.	7.
UT:SALT LAKE CITY	12/ 1/80	1.41	0.12	4.	7.	0.	8.	1.	7.
VA:NORFOLK	12/ 5/80	1.51	0.12	6.	7.	1.	8.	10.	7.
WA:SEATTLE	12/ 1/80	1.50	0.08	2.	5.	-7.	6.	3.	5.
WA:SPOKANE	12/ 1/80	1.35	0.12	8.	7.	-4.	8.	5.	7.
WI:MILWAUKEE	12/ 1/80	1.44	0.12	4.	7.	-2.	8.	1.	7.
WV:CHARLESTON	12/ 1/80	1.32	0.12	5.	7.	-5.	8.	1.	7.
WY:LARAMIE	12/16/80	1.24	0.12	0.	7.	-5.	8.	3.	7.

NS NO SAMPLE
e 2 SIGMA COUNTING ERROR

TABLE 26

STRONTIUM-90 AND STRONTIUM-89 IN PASTEURIZED MILK

EPA REGIONAL COMPOSITES

OCTOBER 1980

EPA REGION	^{90}Sr pCi/l	± e	^{89}Sr pCi/l	± e*
I	3.1	1.0	1.	5.
II	3.2	1.3	0.	5.
III	3.0	1.0	1.	5.
IV	3.1	1.1	1.	5.
V	3.2	1.0	1.	5.
VI	2.8	1.1	1.	5.
VII	2.7	1.1	0.	5.
VIII	2.3	0.9	1.	5.
IX	0.3	0.4	1.	5.
X	2.4	1.0	0.	5.

e 2 SIGMA COUNTING ERROR

e* ANALYTICAL ERROR TERM WHICH CLOSELY APPROXIMATES THE COUNTING ERROR

Plutonium and Uranium in Milk

Ten milk sampling sites near plutonium handling facilities, plus 2 sites chosen for background information, are analyzed annually for plutonium and uranium. Analytical techniques approximate those used for air filters.

Only plutonium analyses were performed on the 1974 samples, but due to increased emphasis on levels of natural radioactivity, uranium analyses were included for 1975 - 1976 samples. Data for samples collected April 1978 were reported in ERD 14.

Iodine-129 in Milk

These analyses were designed to assess environmental levels of iodine-129 around nuclear fuel reprocessing facilities. Annual samples collected from Montgomery, Alabama (background); Idaho Falls, Idaho; Chicago, Illinois; Buffalo, New York; and Charleston, South Carolina; are analyzed for iodine-129 and stable iodine-127. Results for 1978 were reported in ERD 17.

Carbon-14 in Milk

Nine stations, chosen for wide geographical distribution, contribute milk samples for annual analysis for carbon-14. These samples have monitored the carbon-14 levels in the food chain resulting from nuclear testing.

Analysis consists of combusting the samples and measuring released carbon dioxide through liquid scintillation.

The results of carbon-14 analysis on samples collected during May 1974 were reported in ERD Report 2, September 1975.

SECTION V. Human Bone Program

The Human Bone Program (formerly Human Bone Network) began operation in 1961 to obtain data on the concentration of strontium-90 in man by age and geographical region. The target population for this network is comprised of children and young adults up to 25 years of age. The bone specimens were limited to accident victims or persons who had died of an acute disease process that was not likely to impair bone metabolism.

The following are operational characteristics of this program:

All samples are composited according to age and geographical locations.

Strontium-90, plutonium-238 and -239, and calcium analyses are performed annually on the composite samples.

No additional bone samples were procured past FY-75. Analysis of samples on hand will be completed and results evaluated.

SECTION VI. Pan American Health Organization (PAHO) Air and Milk Program

An agreement was made in 1962 with the Pan American Health Organization (PAHO) to develop a collaborative program for furnishing assistance to health authorities in the Americas for developing programs of radiological health. The agreement provided limited quantities of essential equipment on a loan basis to PAHO which were needed to establish surveillance programs, and also provided the requisite laboratory services for analysis of air particulates, milk, water, and other samples. Technical advice was given on research designs for radiological health programs.

Analyses prior to January 1977 included the following:

Milk - 4 monthly samples analyzed for gamma-emitting radionuclides, strontium-89, -90.

Air particulates - 12 stations with daily samples analyzed for gross beta.

Beginning January 1, 1977, the PAHO Air Program was discontinued and milk sampling was reduced to quarterly collection.

The PAHO programs are included organizationally as an ancillary function of the ERAMS.

Results of the Pan American surface air particulate analyses for October - December 1976 were reported in ERD 8.

Results of the Pan American milk quarterly analyses for October - December 1978 were reported in ERD 16.

Radiologic Health Section
California Department of Health

California Air Sampling Program

The Radiologic Health Section of the California Department of Health with the assistance of several cooperating agencies maintains a statewide air sampling network. One of the objectives of this program is to measure and evaluate the contribution of fixed effluent sources to particulate activity in the air. Data from air samplers placed in proximity to nuclear facilities are compared with information obtained from similar equipment in communities close to the facilities and at several "background" or control stations.

Airborne particles are collected by a continuous sampling of air filtered through a 47 millimeter membrane filter, 0.8 micrometer pore size, using a Gast air pump that provides an average sampling rate of 40 liters per minute. Air volumes are measured with a direct reading gas meter. Filters are replaced when approximately 300 cubic meters of air are collected, i.e., on a weekly or semi-weekly schedule. Charcoal cartridges mounted behind the filters at 10 of the 18 stations are replaced weekly.

All air samples are sent to the Department's Sanitation and Radiation Laboratory, where the filters are analyzed for gross beta radioactivity 72 hours after collection. Alpha activity is determined weekly on ashed filters. Gamma spectroscopy and an analysis for strontium-89 and strontium-90 are normally performed on quarterly composites from each location. Immediate gamma scans are run on any samples for which abnormal gross activity values are observed. Charcoal cartridges are analyzed for radioiodines by gamma spectroscopy as soon as received.

A monthly summary of gross alpha and beta radioactivity in California air for July - December 1980 are shown in Tables 26 - 31.

Radionuclides in composites of California air for the second and third quarters of 1980 are reported in Tables 32 and 33.

Table 26

MONTHLY SUMMARY
OF GROSS ALPHA AND BETA RADIOACTIVITY IN CALIFORNIA AIR

(Alpha, fCi/m^3; Beta, fCi/m^3)

July - 1980
Month Year

Station	ALPHA					BETA				
	No. of Samples	Max.	Min.	Averages		No. of Samples	Max.	Min.	Averages	
				Mean	±				Mean	±
Eureka	4	.9	.0	.4	.5	9	19	1	8	3
Humboldt Hill	4	.6	.0	.2	.3	9	18	4	9	3
Redding	4	1.0	.5	.8	.7	9	78	27	46	7
Sacramento	4	4.3	.1	1.5	.6	9	24	6	16	3
Rancho Seco	4	3.3	1.4	2.5	.8	9	66	19	45	5
Vallejo	4	.9	.0	.5	.4	6	15	8	11	2
Berkeley	3	1.0	.3	.6	.5	6	17	5	10	2
Livermore	4	12.7	1.2	5.6	1.5	9	69	17	42	6
Salinas	4	2.4	.6	1.3	.6	7	20	6	12	2
San Luis Obispo	4	1.7	.3	1.1	.7	9	28	11	18	4
Diablo Canyon	4	5.4	.1	2.1	1.4	4	32	20	26	5
Bakersfield	-	-	-	-	-	-	-	-	-	-
Los Angeles	4	1.8	.6	1.1	.7	9	49	10	25	5
San Onofre	4	1.4	.6	1.0	.7	4	28	15	20	3
San Diego	4	4.0	.1	1.5	.8	9	46	16	28	5
Barstow	4	1.3	.6	.9	.6	6	41	18	33	4
El Centro	4	7.3	1.1	3.0	.9	9	54	19	31	5
Summary	63	12.7	.0	1.5	.7	123	78	1	24	4

Source: California State Department of Health Services

MONTHLY SUMMARY
OF GROSS ALPHA AND BETA RADIOACTIVITY IN CALIFORNIA AIR
(Alpha, fCi/m^3; Beta, fCi/m^3)

August - 1980
Month Year

Station	ALPHA					BETA				
	No. of Samples	Max.	Min.	Averages		No. of Samples	Max.	Min.	Averages	
				Mean	±				Mean	±
Eureka	5	.7	.2	.5	.5	9	22	6	11	3
Humboldt Hill	5	1.0	.1	.3	.3	9	28	8	12	3
Redding	5	3.3	1.3	2.0	1.1	9	95	43	60	8
Sacramento	5	2.5	.3	1.4	.5	9	35	11	19	3
Rancho Seco	5	17.8	.1	5.4	1.5	8	65	18	41	4
Vallejo	5	1.2	.0	.5	.5	7	16	7	10	3
Berkeley	5	.9	.2	.5	.4	9	30	7	14	3
Livermore	5	6.4	.5	2.9	1.1	9	98	11	41	6
Salinas	5	6.4	.2	2.0	.7	9	48	8	18	3
San Luis Obispo	5	3.8	.6	1.4	.6	9	77	12	28	4
Diablo Canyon	5	9.4	.4	3.5	1.6	5	47	25	37	5
Bakersfield	-	-	-	-	-	-	-	-	-	-
Los Angeles	5	5.2	.7	2.3	.9	9	50	21	31	5
San Onofre	5	1.9	1.2	1.4	.8	5	29	22	26	4
San Diego	5	1.5	.5	.8	.5	9	97	24	37	5
Barstow	5	3.7	.7	1.9	.8	9	52	32	35	5
El Centro	5	2.0	.3	1.1	.6	9	42	13	28	4
Summary	80	17.8	.0	1.7	.8	133	98	6	28	4

Source: California State Department of Health Services

Table 28

MONTHLY SUMMARY
OF GROSS ALPHA AND BETA RADIOACTIVITY IN CALIFORNIA AIR

(Alpha, fCi/m^3; Beta, fCi/m^3)

September - 1980
Month Year

Station	ALPHA					BETA				
	No. of Samples	Max.	Min.	Averages		No. of Samples	Max.	Min.	Averages	
				Mean	±				Mean	±
Eureka	4	.3	.1	.3	.4	9	22	5	14	3
Humboldt Hill	2	1.0	.3	.6	.4	5	24	7	14	2
Redding	4	1.1	.4	.6	.7	9	70	36	52	8
Sacramento	4	3.5	1.0	2.6	.7	9	43	20	26	3
Rancho Seco	4	9.7	1.6	5.9	1.2	9	83	34	53	5
Vallejo	3	.5	.2	.3	.3	8	25	8	17	3
Berkeley	4	.8	.5	.7	.4	9	25	11	16	3
Livermore	4	1.6	1.3	1.4	.8	9	80	12	43	7
Salinas	4	4.1	.4	2.8	.8	9	76	10	39	4
San Luis Obispo	4	1.4	.3	.8	.5	9	48	15	28	4
Diablo Canyon	4	7.9	.2	2.8	1.5	4	60	21	45	6
Bakersfield	-	-	-	-	-	-	-	-	-	-
Los Angeles	4	1.8	.8	1.5	.8	9	64	17	35	6
San Onofre	3	1.5	.9	1.1	.7	3	43	22	28	3
San Diego	4	1.2	.4	.8	.6	9	62	25	37	5
Barstow	4	1.9	1.6	1.8	.8	9	77	30	51	5
El Centro	4	10.3	.9	3.8	1.1	9	78	21	52	5
Summary	60	10.3	.1	1.7	.7	128	83	5	34	4

Source: California State Department of Health Services

MONTHLY SUMMARY
OF GROSS ALPHA AND BETA RADIOACTIVITY IN CALIFORNIA AIR

(Alpha, fCi/m^3; Beta, fCi/m^3)

October 1980
Month Year

Station	ALPHA					BETA				
	No. of Samples	Max.	Min.	Averages		No. of Samples	Max.	Min.	Averages	
				Mean	±				Mean	±
Eureka	5	.9	.2	.7	.6	9	60	11	21	5
Humboldt Hill	5	.9	.0	.4	.4	9	71	13	29	5
Redding	5	4.3	1.2	2.1	1.1	9	164	30	88	10
Sacramento	5	5.7	.7	3.2	.8	9	83	25	45	4
Rancho Seco	5	5.5	2.0	3.6	1.0	9	114	49	85	7
Vallejo	5	10.3	.6	2.8	1.0	9	103	16	46	6
Berkeley	5	2.5	.2	1.5	.6	18	133	13	42	7
Livermore	5	12.4	.2	7.7	1.8	9	123	25	81	9
Salinas	5	14.6	.8	6.6	1.3	9	143	17	72	6
San Luis Obispo	5	3.2	.9	1.9	.8	8	74	20	52	5
Diablo Canyon	5	7.4	1.7	3.8	1.9	5	185	28	72	10
Bakersfield	-	-	-	-	-	-	-	-	-	-
Los Angeles	5	4.7	1.7	3.3	1.5	9	127	26	65	11
San Onofre	5	4.1	1.6	2.4	1.2	5	87	36	66	6
San Diego	5	2.0	.5	1.3	.7	9	205	24	67	7
Barstow	5	5.8	1.2	2.6	.9	8	239	36	83	7
El Centro	4	3.3	.7	2.4	1.0	7	183	40	74	7
Summary	79	14.6	.0	2.9	1.0	141	239	11	62	7

Source: California State Department of Health Services

Table 30

MONTHLY SUMMARY
OF GROSS ALPHA AND BETA RADIOACTIVITY IN CALIFORNIA AIR

(Alpha, fCi/m^3; Beta, fCi/m^3)

November 1980
Month Year

Station	ALPHA					BETA				
	No. of Samples	Max.	Min.	Averages		No. of Samples	Max.	Min.	Averages	
				Mean	±				Mean	±
Eureka	4	2.1	.2	1.0	.7	8	211	30	80	7
Humboldt Hill	4	1.3	.3	.8	.5	8	170	48	85	6
Redding	4	4.4	.0	2.0	1.1	6	730	212	313	17
Sacramento	4	6.9	1.1	3.4	.8	7	159	66	94	6
Rancho Seco	4	5.4	1.2	3.2	1.0	8	731	97	232	13
Vallejo	4	8.9	.3	3.3	1.1	7	255	79	125	9
Berkeley	4	3.1	.5	1.8	.7	13	254	71	144	11
Livermore	4	6.6	3.0	4.7	1.4	8	281	140	202	13
Salinas	4	18.2	4.8	10.7	1.5	8	345	107	199	10
San Luis Obispo	3	3.6	.8	2.2	.9	8	281	95	186	10
Diablo Canyon	3	10.8	2.9	6.8	2.6	3	438	323	400	22
Bakersfield	-	-	-	-	-	-	-	-	-	-
Los Angeles	4	8.9	1.7	3.8	1.4	8	402	98	227	14
San Onofre	4	7.2	.4	3.5	1.4	4	288	136	213	12
San Diego	4	3.6	1.4	2.7	1.0	7	345	139	217	11
Barstow	4	7.7	2.1	4.4	1.2	8	466	144	266	12
El Centro	5	58.8	1.1	11.1	2.6	8	546	148	294	16
Summary	63	58.8	.0	4.1	1.3	119	731	30	205	12

Source: California State Department of Health Services

Table 31

MONTHLY SUMMARY

OF GROSS ALPHA AND BETA RADIOACTIVITY IN CALIFORNIA AIR

(Alpha, fCi/m^3; Beta, fCi/m^3)

December **1980**
Month Year

Station	ALPHA					BETA				
	No. of Samples	Max.	Min.	Averages		No. of Samples	Max.	Min.	Averages	
				Mean	±				Mean	±
Eureka	4	3.1	.7	1.3	.7	9	321	52	118	10
Humboldt Hill	4	2.1	.0	1.0	.5	9	234	50	134	8
Redding	5	5.3	1.3	2.6	1.3	10	457	176	305	21
Sacramento	4	3.5	.3	1.2	.5	8	176	54	91	6
Rancho Seco	5	9.4	1.0	5.3	1.2	10	288	125	191	11
Vallejo	5	4.2	.8	2.3	.9	10	248	73	147	10
Berkeley	5	4.6	.9	2.6	1.1	10	380	88	215	14
Livermore	5	24.1	1.2	8.1	1.9	9	438	128	229	13
Salinas	5	31.7	1.6	14.1	1.6	8	442	108	270	11
San Luis Obispo	5	7.0	.6	3.1	.9	10	381	108	278	13
Diablo Canyon	6	7.7	2.1	4.6	2.2	6	775	98	434	23
Bakersfield	-	-	-	-	-	-	-	-	-	-
Los Angeles	5	5.2	1.4	2.9	1.2	10	493	178	279	16
San Onofre	4	10.6	3.4	5.7	1.8	4	345	243	276	12
San Diego	5	7.7	.3	2.6	.9	10	505	124	279	13
Barstow	5	6.5	1.1	3.2	1.0	10	418	173	272	13
El Centro	5	12.5	4.4	7.9	1.7	10	440	284	339	15
Summary	77	31.7	.0	4.3	1.2	143	775	50	241	13

Source: California State Department of Health Services

* Minimum Detection Limit
* * Weekly Analysis of Charcoal Cartridge
NS= No Sample

Table 32
RADIOACTIVITY IN AIR COMPOSITES
pCi/1000m^3

Second Quarter 1980 Year

Source: CA Department of Health

LOCATION	Be-7	Zr-95	Nb-95	Ru-103	Ru-106	Cs-137	Ce-141	Ce-144	K-40	Sr-89	Sr-90	I-131**
Eureka	47	0.1*	0.2*	0.5*	0.4*	0.0*	0.2*	0.1*	0.5*	0.1	0.2	0
±	5									0.2	0.1	2
Humboldt Bay P.P.	62	0.1*	0.2*	0.5*	0.3*	0.4	0.2*	0.1*	0.5*	0.1	0.2	0
±	8					0.2				0.3	0.1	2
Redding	175	0.2*	0.4*	0.6	0.6*	1.0	0.4	2.9	0.9*	0.5	0.7	NS
±	13			0.3		0.3	0.3	0.8		0.6	0.1	
Sacramento	33	0.1*	0.2*	0.3*	0.3*	0.3	0.2*	0.1*	0.4*	0.3	0.2	0
±	4					0.1				0.2	0.1	2
Rancho Seco N.G.S.	97	0.1*	0.2*	0.4*	0.3*	0.5	0.2*	0.1*	0.4*	0.3	0.3	0
±	6					0.1				0.3	0.1	2
Vallejo	60	0.2*	0.3*	0.6*	0.5*	0.2	0.3*	0.1*	0.6*	0.0	0.3	0
±	7					0.2				0.3	0.1	2
Berkeley	56	0.1*	0.2*	0.4*	0.3*	0.2	0.1*	0.1*	0.5*	0.3	0.2	NS
±	4					0.1				0.2	0.1	
Livermore	61	0.2*	0.3*	0.7*	0.5*	0.5	0.3*	0.1*	0.8*	0.5	0.2	0
±	7					0.2				0.4	0.1	2
Salinas	62	0.1*	0.2*	0.4*	0.3*	0.2	0.2*	0.1*	0.5*	0.3	0.2	NS
±	5					0.2				0.2	0.1	

* Minimum Detection Limit
** Weekly Analysis of Charcoal Cartridge
NS= No Sample

Table 32 (Continued)
RADIOACTIVITY IN AIR COMPOSITES
pCi/1000m^3

Second Quarter 1980 Year
Source: CA Department of Health

LOCATION		Be-7	Zr-95	Nb-95	Ru-103	Ru-106	Cs-137	Ce-141	Ce-144	K-40	Sr-89	Sr-90	I-131 **
San Luis Obispo		83	0.1*	0.2*	0.6*	0.4*	0.4	0.3*	0.1*	3.4	0.4	0.2	0
	±	8					0.2			1.9	0.3	0.1	2
Diablo Canyon N.P.P.		152	0.3*	0.4*	1.0*	0.7*	0.5	0.5*	0.2*	0.9*	0.1	0.4	0
	±	11					0.3				0.4	0.1	2
Bakersfield		NS											
	±												
San Bernardino		NS											
	±												
Barstow		182	0.1*	0.2*	0.4*	0.3*	0.8	0.2*	0.1*	0.4*	0.9	0.5	NS
	±	8					0.1				0.4	0.1	
El Centro		73	0.1*	0.2*	0.4*	0.3*	0.5	0.2*	0.1*	0.5*	0.4	0.5	NS
	±	7					0.2				0.4	0.1	
Los Angeles		86	0.2*	0.3*	0.6*	0.5*	0.4	0.3*	0.1*	0.7*	0.5	0.4	0
	±	8					0.2				0.4	0.1	2
San Onofre N.G.S.		87	0.2*	0.2*	1.0*	0.6*	0.7	0.5*	0.1*	0.9*	0.4	0.1	0
	±	10					0.2				0.6	0.0	2
San Diego		99	0.2*	0.2*	0.6*	0.4*	0.5	0.3*	0.1*	0.6*	1.0	0.4	NS
	±	7					0.1				0.5	0.1	

Table 33

RADIOACTIVITY IN AIR COMPOSITES

pCi/1000m^3

* Minimum Detection Limit
* * Weekly Analysis of Charcoal Cartridge
NS= No Sample

Third Quarter 1980 Year
Source: CA Department of Health Services

LOCATION		Be-7	Zr-95	Nb-95	Ru-103	Ru-106	Cs-137	Ce-141	Ce-144	K-40	Sr-89	Sr-90	I-131**
Eureka		48	0.2*	0.3*	0.8*	0.6*	0.1*	0.3*	0.2*	1.0*	0.1	0.1	0
	±	9									0.4	0.1	2
Humboldt Bay P.P.		34	0.2*	0.4*	0.9*	0.5*	0.1*	0.3*	0.1*	4.6	0.2	0.0	0
	±	6								2.6	0.3	0.1	2
Redding		184	0.5*	0.8*	1.9*	1.1*	0.7	0.7*	0.3*	1.4*	0.2	0.4	NS
	±	16					0.2				0.8	0.1	
Sacramento		41	0.1*	0.2*	0.5*	0.4*	0.0*	0.2*	0.1*	2.2	0.2	0.1	0
	±	4								1.0	0.3	0.1	2
Rancho Seco N.G.S.		83	0.2*	0.4*	0.9*	0.5*	0.3	0.4*	0.2*	8.3	0.0	0.2	0
	±	9					0.1			2.2	0.4	0.1	2
Vallejo		47	0.3*	0.5*	1.1*	0.6*	0.2	1.7	1.5	7.5	0.1	0.1	0
	±	10					0.1	0.6	0.6	2.4	0.4	0.1	2
Berkeley		58	0.2*	0.2*	0.5*	0.5*	0.1*	0.2*	0.1*	4.8	-0.1	0.2	NS
	±	5								1.6	0.3	0.1	
Livermore		68	0.1*	0.2*	0.5*	0.4*	0.1*	0.2*	0.1*	11.0	0.3	0.2	0
	±	5								2.2	0.6	0.1	2
Salinas		68	0.1*	0.1*	0.3*	0.2*	0.0*	0.1*	0.1*	6.9	0.3	0.1	NS
	±	5								1.4	0.3	0.1	

* Minimum Detection Limit
** Weekly Analysis of Charcoal Cartridge
NS= No Sample

Table 33 (Continued)
RADIOACTIVITY IN AIR COMPOSITES
pCi/1000m^3

Third Quarter 1980 Year

Source: CA Department of Health Servi

LOCATION	Be-7	Zr-95	Nb-95	Ru-103	Ru-106	Cs-137	Ce-141	Ce-144	K-40	Sr-89	Sr-90	I-131 **
San Luis Obispo ±	59 7	0.2*	0.4*	1.0*	0.5*	0.3 0.2	1.4 0.5	0.2*	7.2 2.1	-0.3 0.5	0.2 0.1	0 2
Diablo Canyon N.P.P. ±	150 17	0.6*	1.2*	2.6*	1.5*	0.5*	1.0*	0.4*	2.1*	-0.2 1.1	0.3 0.2	0 2
Bakersfield ±	No Sample											
San Bernardino ±	No Sample											
Barstow ±	117 9	0.2*	0.4*	0.9*	0.6*	0.2 0.1	0.3*	0.2*	5.6 2.0	-0.3 0.5	0.3 0.1	NS
El Centro ±	116 8	0.2*	0.3*	0.7*	0.6*	0.1*	0.3*	0.1*	4.3 1.7	0.2 0.4	0.2 0.1	NS
os Angeles ±	85 8	0.3*	0.4*	1.0*	0.7*	0.1*	0.3*	0.2*	6.7 2.4	-0.2 0.5	0.2 0.1	0 2
an Onofre N.G.S. ±	96 8	0.2*	0.4*	0.9*	0.4*	0.1*	0.3*	0.1*	11.1 2.7	-0.3 0.8	0.2 0.1	0 2
an Diego ±	113 10	0.3*	0.5*	1.2*	0.7*	0.1*	0.4*	0.2*	8.9 2.6	0.7 0.6	0.3 0.1	NS

Radionuclides in California Milk

Although milk is only one of the sources of dietary intake of environmental radioactivity, it is the food item that is most useful as an indicator of the general population's intake of radionuclide contaminants resulting from environmental releases. The objective of this milk sampling network is to obtain information on current radionuclide concentrations and long-term trends. From this information the need for further investigation or corrective public health action can be determined.

The California network consists of 10 stations, six of which are from dairies close to major nuclear facilities, and the other four represent controls, composited from local milksheds in similar geographic locations from the plants. Samples are obtained quarterly and analyzed immediately upon receipt.* Results are reported as pCi/l with an error of two standard deviations. Data for the second and third quarters of 1980 are shown in Tables 34 and 35.

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*Radionuclides are determined by gamma spectroscopy, with the exception of iodine-131, which is analyzed in accordance with procedures specified in USNRC Regulatory Guide 4.3, and strontium-89 and strontium-90, which are determined by radiochemical technique.

TABLE 34 - RADIONUCLIDES IN CALIFORNIA MILK

pCi/l

Sampling Date	Sampling Location	Radionuclide					
		K-40	Ba-La-140	Cs-137	I-131*	Sr-89	Sr-90
1980							
4-1	Del Norte County	1110 ± 32	-2 ± 4	2 ± 2	0.0 ± 0.1	1 ± 2	8.0 ± 0.7
4-7	Humboldt Bay North	1148 ± 21	0 ± 2	0 ± 1	0.0 ± 0.1	2 ± 1	3.6 ± 0.6
4-8	Humboldt Bay South	1074 ± 28	-7 ± 3	-1 ± 2	0.1 ± 0.1	1 ± 1	1.7 ± 0.4
4-2	Humboldt County	1150 ± 20	-1 ± 2	1 ± 1	0.1 ± 0.1	0 ± 1	2.0 ± 0.4
4-8	Rancho Seco North	1090 ± 21	1 ± 2	-2 ± 2	0.0 ± 0.1	1 ± 1	1.2 ± 0.5
4-8	Rancho Seco South	1146 ± 31	-2 ± 4	0 ± 2	0.0 ± 0.1	0 ± 1	0.8 ± 0.4
4-3	Sacramento County	1116 ± 19	0 ± 2	1 ± 1	0.1 ± 0.1	0 ± 1	1.4 ± 0.4
4-20	Diablo Canyon North	1107 ± 20	1 ± 2	1 ± 1	0.1 ± 0.1	0 ± 1	0.7 ± 0.4
4-20	Diablo Canyon South	1106 ± 16	0 ± 2	0 ± 1	0.0 ± 0.1	0 ± 1	1.0 ± 0.4
4-3	San Luis Obispo County	1152 ± 21	-7 ± 2	-2 ± 2	0.0 ± 0.1	0 ± 1	0.6 ± 0.4

* I-131 analysis by ion exchange and precipitation method.

Source: California Dept. Health Services

Table 35 - RADIONUCLIDES IN CALIFORNIA MILK

pCi/1

Sampling Date	Sampling Location	Radionuclide					
		K-40	Ba-La-140	Cs-137	I-131*	Sr-89	Sr-90
7-9-80	Del Norte County	1146 ± 18	3 ± 2	3 ± 1	0.0 ± 0.1	1 ± 1	7.0 ± 0.7
7-28-80	Humboldt Bay North	1115 ± 18	2 ± 2	2 ± 1	0.0 ± 0.1	0 ± 1	2.6 ± 0.5
7-28-80	Humboldt Bay South	1071 ± 17	1 ± 2	2 ± 1	0.0 ± 0.1	0 ± 1	2.9 ± 0.5
7-8-80	Humboldt County	1199 ± 21	4 ± 2	3 ± 2	0.1 ± 0.1	0 ± 1	2.1 ± 0.4
7-8-80	Rancho Seco North	1110 ± 28	4 ± 3	3 ± 2	0.1 ± 0.1	0 ± 1	2.0 ± 0.4
7-8-80	Rancho Seco South	1106 ± 21	1 ± 2	1 ± 2	0.0 ± 0.1	0 ± 1	0.5 ± 0.3
7-6-80	Sacramento County	1118 ± 29	1 ± 3	3 ± 2	0.0 ± 0.1	0 ± 1	1.5 ± 0.4
7-20-80	Diablo Canyon North	1100 ± 37	1 ± 4	1 ± 3	0.0 ± 0.1	0 ± 1	1.0 ± 0.4
7-20-80	Diablo Canyon South	1177 ± 23	1 ± 2	0 ± 2	0.0 ± 0.1	0 ± 1	0.8 ± 0.4
7-22-80	San Luis Obispo County	1147 ± 17	1 ± 2	3 ± 1	0.0 ± 0.1	1 ± 1	1.2 ± 0.4

* I-131 analysis by ion exchange and precipitation method.

Source: California Department of Health Services

Radiological Health Laboratory
Indiana State Board of Health

Indiana Milk Analysis Program

In order to evaluate the fallout on Indiana pasturelands, the State has implemented a program whereby monthly milk samples from five geographical areas are sent to the Radiological Health Laboratory of the State Board of Health. The milk in these samples is bottled on the same date in all five areas to provide uniform time from pasture to the lab.

Once in the laboratory, the milk is first analyzed by gamma spectroscopy for iodine-131, barium-140, cesium-137, and potassium-40. A one gallon sample is analyzed on a 3" x 3" NaI(Tl) scintillation crystal for 4800 seconds. A background sample of 48,000 seconds is also run. The data are analyzed to give pCi/l for each radionuclide.

A quarterly composite sample is saved and run for strontium-89 and -90 by ion exchange method.

Data for the third and fourth quarters of 1980 and the first quarter of 1981 are shown in Table 36.

Table 36

INDIANA MILK ANALYSIS PROGRAM

(Third and Fourth Quarters of 1980
and First Quarter of 1981)

Concentrations of Selected Gamma Radionuclides in Pasteurized Milk

(pCi/l ± 2 Sigma Counting Error)

Location	Date	I-131	Ba-140	Cs-137	K-40
IN: Evansville	6/80	3 ± 5	1 ± 5	3 ± 5	1021 ± 75
Fort Wayne	6/80	3 ± 5	0 ± 5	9 ± 5	877 ± 72
Indianapolis	6/80	2 ± 5	5 ± 5	0 ± 5	970 ± 75
Rochester	6/80	9 ± 5	0 ± 5	4 ± 5	1073 ± 76
Seymour	6/80	0 ± 5	5 ± 5	4 ± 5	920 ± 74
IN: Evansville	7/80	0 ± 5	4 ± 5	2 ± 5	1000 ± 75
Fort Wayne	7/80	3 ± 5	9 ± 5	13 ± 5	910 ± 73
Indianapolis	7/80	1 ± 5	9 ± 5	7 ± 5	980 ± 75
Rochester	7/80	0 ± 5	5 ± 5	9 ± 5	1010 ± 75
Seymour	7/80	4 ± 5	6 ± 5	1 ± 5	1010 ± 75
IN: Evansville	8/80	7 ± 5	0 ± 5	5 ± 5	890 ± 70
Fort Wayne	8/80	3 ± 5	2 ± 5	9 ± 5	897 ± 72
Indianapolis	8/80	16 ± 5	6 ± 5	13 ± 5	1016 ± 76
Rochester	8/80	0 ± 5	0 ± 5	2 ± 5	865 ± 71
Seymour	8/80	2 ± 5	6 ± 5	8 ± 5	912 ± 74
IN: Evansville	9/80	5 ± 5	6 ± 5	4 ± 5	853 ± 72
Fort Wayne	9/80	11 ± 5	14 ± 5	21 ± 6	963 ± 75
Indianapolis	9/80	7 ± 5	7 ± 5	11 ± 5	852 ± 72
Rochester	9/80	9 ± 5	4 ± 5	8 ± 5	873 ± 72
Seymour	9/80	6 ± 5	2 ± 5	12 ± 5	867 ± 72
IN: Evansville	10/80	10 ± 5	0 ± 5	15 ± 6	1247 ± 79
Fort Wayne (A)	10/80	-	-	-	-
Indianapolis	10/80	22 ± 5	0 ± 5	18 ± 6	1182 ± 78
Rochester	10/80	5 ± 5	1 ± 5	10 ± 5	1132 ± 77
Seymour	10/80	5 ± 5	4 ± 5	8 ± 5	1084 ± 76

(A) Sample Not Received

Table 36 (Continued)
INDIANA MILK ANALYSIS PROGRAM

(Third and Fourth Quarters of 1980
and First Quarter of 1981)

Concentrations of Selected Gamma Radionuclides in Pasteurized Milk

(pCi/1 ± 2 Sigma Counting Error)

	Location	Date	I-131	Ba-140	Cs-137	K-40
IN:	Evansville	11/80	2 ± 6	0 ± 6	11 ± 7	1056 ± 87
	Fort Wayne	11/80	7 ± 6	0 ± 6	16 ± 7	1092 ± 88
	Indianapolis	11/80	0 ± 6	2 ± 6	12 ± 7	1024 ± 88
	Rochester	11/80	0 ± 6	1 ± 6	13 ± 7	1152 ± 90
	Seymour	11/80	0 ± 6	0 ± 6	9 ± 7	1076 ± 89
IN:	Evansville	12/80	1 ± 5	2 ± 5	11 ± 5	1094 ± 77
	Fort Wayne	12/80	0 ± 5	0 ± 5	7 ± 5	1163 ± 79
	Indianapolis	12/80	0 ± 5	4 ± 5	8 ± 5	1136 ± 78
	Rochester	12/80	6 ± 5	6 ± 5	13 ± 6	1117 ± 78
	Seymour	12/80	1 ± 5	4 ± 5	10 ± 5	1097 ± 78
IN:	Evansville	1/81	5 ± 6	6 ± 6	3 ± 7	925 ± 86
	Fort Wayne	1/81	0 ± 6	6 ± 6	5 ± 7	935 ± 86
	Indiaanpolis	1/81	3 ± 6	0 ± 6	8 ± 7	956 ± 86
	Rochester	1/81	1 ± 6	5 ± 6	6 ± 7	992 ± 87
	Seymour	1/81	3 ± 6	2 ± 6	6 ± 7	1102 ± 89
IN:	Evansville	2/81	4 ± 6	1 ± 6	10 ± 7	907 ± 83
	Fort Wayne	2/81	11 ± 6	9 ± 6	22 ± 7	838 ± 82
	Indianapolis	2/81	5 ± 6	5 ± 6	14 ± 7	1002 ± 85
	Rochester	2/81	10 ± 7	13 ± 6	24 ± 7	1003 ± 86
	Seymour	2/81	1 ± 6	2 ± 6	7 ± 7	930 ± 83
IN:	Evansville	3/81	1 ± 6	4 ± 6	8 ± 7	944 ± 85
	Fort Wayne	3/81	0 ± 6	3 ± 6	9 ± 7	985 ± 86
	Indianapolis	3/81	1 ± 6	4 ± 6	6 ± 7	927 ± 85
	Rochester	3/81	3 ± 6	0 ± 6	10 ± 7	1030 ± 86
	Seymour	3/81	1 ± 6	0 ± 6	1 ± 7	935 ± 84

Table 36 (Continued)

Concentrations of ^{90}Sr and ^{89}Sr in Pasteurized Milk

(pCi/l ± 2 Sigma Counting Error)

	Location	Date	^{90}Sr	^{89}Sr
IN:	Evansville	6-9/80	2 ± 0.5	0 ± 0.3
	Fort Wayne	6-9/80	2 ± 0.5	0 ± 0.3
	Indianapolis	6-9/80	2 ± 0.5	0 ± 0.3
	Rochester	6-9/80	2 ± 0.5	0 ± 0.3
	Seymour	6-9/80	2 ± 0.5	0 ± 0.3
IN:	Evansville	10-12/80	1 ± 0.5	0 ± 0.3
	Fort Wayne	10-12/80	3 ± 0.6	0 ± 0.3
	Indianapolis	10-12/80	2 ± 0.5	0 ± 0.3
	Rochester	10-12/80	2 ± 0.5	0 ± 0.3
	Seymour	10-12/80	2 ± 0.5	0 ± 0.3
IN:	Evansville	1-3/81	2 ± 0.5	0 ± 0.3
	Fort Wayne	1-3/81	2 ± 0.5	0 ± 0.3
	Indianapolis	1-3/81	1 ± 0.5	0 ± 0.3
	Rochester	1-3/81	1 ± 0.5	0 ± 0.3
	Seymour	1-3/81	1 ± 0.5	0 ± 0.3

Radiological Health Division
State Hygienic Laboratory of Iowa

Iowa Water Sampling Program

The radiological Health Division of the State Hygienic Laboratory of Iowa with the assistance of the State Department of Environmental Quality (DEQ) maintains a state-wide water sampling program of community drinking waters, surface waters and precipitation. All analyses with the exception of the sequential Ra-226, -228 analyses are performed according to "Standard Methods for the Examination of Water and Wastewater", 14th edition. The sequential analyses for radiums are performed according to the EPA publication, EPA-600/4-75-008, "Interim Radiochemical Methodology for Drinking Water."

The drinking water samples are collected by DEQ regional personnel and sent to the State Hygienic Laboratory where they are preserved with HCl. These waters are analyzed for gross alpha and gross beta radioactivity as a screening process. Subsequent analyses for Ra-226, Ra-228, Sr-90 are performed if screening levels are exceeded. Radium levels are of primary concern in Iowa drinking waters as those levels are elevated in deep geologic aquifers within the state.

Surface waters are collected at eleven sites throughout the state with site selection being determined by proximity upstream and downstream to nuclear power plants in Iowa or those plants discharging into rivers which are natural borders with adjoining states. Gross alpha, gross beta, and tritium are the routine radionuclide analyses for these samples. Strontium is of interest when gross beta screening levels are exceeded or if nuclear weapons testing necessitates monitoring to determine its impact on the environment.

The following environmental radiation data were contributed by the State of Iowa. Data tables are as follows:

Table 37 Iowa City Precipitation (Tritium)

Table 38 Gross Activity - Major Iowa Rivers

Table 39 DEQ Mineral samples - July 1980
Alpha - Beta

Table 40 DEQ Mineral samples - July 1980
226Ra - 228Ra (Alpha - Beta)

Table 41 SDWA samples - July 1980
226Ra - 228Ra (Alpha - Beta)

Table 42 DEQ Mineral samples - August 1980
Alpha - Beta

Table 43 SDWA samples - August 1980
226Ra - 228Ra (Alpha - Beta)

Table 44 DEQ Mineral samples - September 1980
226Ra - 228Ra (Alpha - Beta)

Table 45 SDWA samples - September 1980
226Ra - 228Ra (Alpha - Beta)

Table 46 SDWA samples - September 1980
90sr

[redacted]

UNIVERSITY [redacted] LABORATORY
STATEWIDE DY[redacted]ER REPORT
Background [redacted], Tritium

Data for 3rd Quarter 1980

IOWA CITY PRECIPITATION

Date Collected	Date Counted	^3H Activity, nCi/l
07-16-80	11-08-80	<1.00
07-18-80	11-08-80	<1.00
07-22-80	11-08-80	<1.00
07-29-80	11-08-80	<1.00
08-01-80	11-08-80	<1.00
08-05-80	11-08-80	<1.00
08-06-80	11-08-80	<1.00
08-11-80	11-08-80	<1.00
08-18-80	11-08-80	<1.00
08-21-80	11-08-80	<1.00
09-02-80	11-08-80	<1.00
09-04-80	11-08-80	<1.00
09-08-80	11-08-80	<1.00
09-09-80	11-08-80	<1.00
09-12-80	11-08-80	<1.00
09-15-80	11-08-80	<1.00
09-17-80	11-08-80	<1.00

Table 37 (Continued)

UNIVERSITY HYGIENIC LABORATORY
STATEWIDE DYNAMIC SURFACE WATER REPORT
Background Radiation Levels, Tritium

Data for 3rd Quarter 1980

River	City	Dates Collected Composite Samples	Date Counted	^{3}H Activity nCi/l
Cedar	Cedar Rapids	7-8, 15, 22, 29-80	11-08-80	<1.00
	Cedar Rapids	8-5, 12, 20, 26-80	11-08-80	<1.00
	Cedar Rapids	9-2, 9, 16; 23, 30-80	11-08-80	<1.00
	Vinton	7-7, 15, 21, 28-80	11-08-80	<1.00
	Vinton	8-4, 11, 18, 25-80	11-08-80	<1.00
	Vinton	9-2, 8, 15, 24, 29-80	11-08-80	<1.00
Des Moines	Des Moines	8-5-80	11-08-80	<1.00
	Des Moines	9-7-80	11-08-80	<1.00
Iowa	Iowa City	7-2-80	11-08-80	<1.00
	Iowa City	8-1-80	11-08-80	<1.00
	Iowa City	9-2-80	11-08-80	<1.00
Mississippi	Davenport	7-9, 16, 22, 30-80	11-08-80	<1.00
	Davenport	8-6, 15, 22, 28-80	11-08-80	<1.00
	Davenport	9-4, 11, 17, 25-80	11-08-80	<1.00
	Dubuque	7-3, 11, 18, 25, 31-80	11-08-80	<1.00
	Dubuque	8-7, 14, 21, 28-80	11-08-80	<1.00
	Dubuque	9-4, 12, 18, 25-80	11-08-80	<1.00
	Lansing	7-7, 14, 21, 28-80	11-08-80	<1.00
	Lansing	8-4, 18, 25-80	11-08-80	<1.00
	Lansing	9-3, 8, 15, 22, 29-80	11-08-80	<1.00
Missouri	Council Bluffs	7-9, 14, 23, 28-80	11-08-80	<1.00
	Council Bluffs	8-11, 18, 25-80	11-08-80	<1.00
	Council Bluffs	9-4, 8, 15, 22-80	11-08-80	<1.00
	Sioux City	7-7, 14, 21, 28-80	11-08-80	<1.00
	Sioux City	8-4, 11, 18, 25-80	11-08-80	<1.00
	Sioux City	9-2, 8, 15, 22, 29-80	11-08-80	<1.00
Nishnabotna	Hamburg	7-7-80	11-08-80	<1.00
	Hamburg	8-4-80	11-08-80	<1.00
	Hamburg	9-2-80	11-08-80	<1.00
Skunk	Ames	7-3, 10, 17, 30-80	11-08-80	<1.00
	Ames	8-7, 28-80	11-08-80	<1.00
	Ames	9-4, 18, 25-80	11-08-80	<1.00

Table 38

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL SURFACE WATER SURVEILLANCE
GROSS ACTIVITY REPORTED AS pCi/1

Data for July, August, September 1980

RADIATION #	DATE SAMPLED	ALPHA ACTIVITY TS	ALPHA ACTIVITY DS	ALPHA ACTIVITY SS	BETA-GAMMA ACTIVITY TS	BETA-GAMMA ACTIVITY DS	BETA-GAMMA ACTIVITY SS
		SKUNK RIVER AT AMES					
16676	07-03-80	4.4	3.6	0.8	4	1	3
16700	07-10-80	4.5	1.7	2.8	3	3	Nil
16719	07-17-80	3.6	1.2	2.4	5	5	Nil
16761	07-30-80	2.2	2.2	Nil	1	1	Nil
16804	08-07-80	4.6	2.1	2.5	4	4	Nil
16916	08-28-80	2.8	2.1	0.7	2	1	1
16930	09-04-80	3.1	1.4	1.7	6	3	3
17053	09-18-80	3.8	2.8	1.0	3	3	Nil
17132	09-25-80	6.6	6.2	0.4	1	1	Nil
	Average of 9	4.0	2.6	1.0	3	2	1
		CEDAR RIVER AT CEDAR RAPIDS					
16663	07-01-80	1.3	0.9	0.4	4	4	Nil
16699	07-08-80	1.9	1.6	0.3	4	4	Nil
16718	07-15-80	1.8	1.5	0.3	6	5	1
16735	07-22-80	1.1	0.6	0.5	5	4	1
16773	07-29-80	2.1	2.0	0.1	3	2	1
16806	08-05-80	1.4	0.4	1.0	3	3	Nil
16843	08-12-80	1.1	0.9	0.2	2	2	Nil
16857	08-20-80	1.0	0.8	0.2	6	5	1
16929	08-26-80	2.1	1.0	1.1	5	4	1
16941	09-02-80	1.9	1.1	0.9	8	5	3
17040	09-09-80	1.7	1.0	0.7	5	5	Nil
17078	09-16-80	1.0	0.7	0.3	6	5	1
17112	09-23-80	1.0	0.6	0.4	5	4	1
17159	09-30-80	1.1	0.5	0.6	1	1	Nil
	Average of 14	1.5	1.4	0.5	5	4	1

Table 38 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL SURFACE WATER SURVEILLANCE
GROSS ACTIVITY REPORTED AS pCi/l

Data for July, August, September 1980

RADIATION #	DATE SAMPLED	ALPHA ACTIVITY TS	ALPHA ACTIVITY DS	ALPHA ACTIVITY SS	BETA-GAMMA ACTIVITY TS	BETA-GAMMA ACTIVITY DS	BETA-GAMMA ACTIVITY SS
	MISSOURI RIVER AT COUNCIL BLUFFS						
16709	07-09-80	2.5	1.9	0.6	8	8	Nil
16732	07-14-80	4.2	3.5	0.7	3	3	Nil
16737	07-23-80	4.5	3.4	1.1	3	3	Nil
16774	07-28-80	3.4	2.6	0.8	4	4	Nil
16813	08-11-80	2.7	1.4	1.3	1	1	Nil
16855	08-18-80	4.5	3.2	1.3	6	4	2
16917	08-25-80	8.0	6.9	1.1	4	2	2
16942	09-04-80	3.0	1.6	1.4	7	7	Nil
16986	09-08-80	3.6	2.7	0.9	10	8	2
17054	09-15-80	7.3	3.2	4.1	5	5	Nil
17110	09-22-80	8.4	7.0	1.4	3	Nil	3
	Average of 11	4.7	3.4	1.3	5	4	1
	MISSISSIPPI RIVER AT DAVENPORT						
16698	07-09-80	1.4	0.9	0.5	6	6	Nil
16717	07-16-80	1.8	1.7	0.1	7	3	4
16741	07-22-80	11.8	7.2	4.6	5	5	Nil
16762	07-30-80	1.5	1.2	0.3	3	3	Nil
16801	08-06-80	0.8	0.6	0.2	3	3	Nil
16844	08-15-80	1.3	1.0	0.3	4	4	Nil
16868	08-22-80	1.6	0.9	0.7	4	3	1
16895	08-28-80	1.2	0.8	0.4	4	3	1
16983	09-04-80	0.8	0.3	0.5	5	4	1
17039	09-11-80	1.8	0.8	1.0	4	4	Nil
17080	09-17-80	1.1	0.4	0.7	6	5	1
17111	09-25-80	1.4	0.6	0.8	6	3	3
	Average of 12	2.2	1.4	0.8	5	4	1

Table 38 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL SURFACE WATER SURVEILLANCE
GROSS ACTIVITY REPORTED AS pCi/l

Data for July, August, September 1980

RADIATION #	DATE SAMPLED	ALPHA ACTIVITY TS	ALPHA ACTIVITY DS	ALPHA ACTIVITY SS	BETA-GAMMA ACTIVITY TS	BETA-GAMMA ACTIVITY DS	BETA-GAMMA ACTIVITY SS
	DES MOINES RIVER AT DES MOINES						
16795	08-04-80	2.9	2.7	0.2	5	5	Nil
16948	09-07-80	4.3	3.4	0.9	8	7	1
	Average of 2	3.6	3.0	0.6	7	6	1
	MISSISSIPPI RIVER AT DUBUQUE						
16677	07-03-80	0.8	0.6	0.2	7	6	1
16710	07-11-80	2.4	1.4	1.0	6	6	Nil
16729	07-18-80	1.4	1.1	0.3	4	4	Nil
16740	07-25-80	1.4	0.9	0.5	5	4	1
16772	07-31-80	1.0	0.7	0.3	4	4	Nil
16803	08-07-80	1.2	1.0	0.2	3	3	Nil
16841	08-14-80	0.6	0.5	0.1	4	4	Nil
16869	08-21-80	3.9	2.8	1.1	1	1	Nil
16918	08-28-80	1.2	0.9	0.3	4	4	Nil
16940	09-04-80	1.1	0.6	0.5	4	4	Nil
17051	09-12-80	0.8	0.4	0.4	5	4	1
17079	09-18-80	0.7	0.4	0.3	4	3	1
17133	09-25-80	2.1	0.9	1.2	4	3	1
	Average of 13	1.4	0.9	0.5	4	4	Nil
	NISHNABOTNA RIVER AT HAMBURG						
16711	07-07-80	1.7	0.6	1.1	9	9	Nil
16802	08-04-80	2.4	1.4	1.0	3	2	1
16925	09-02-80	1.6	1.0	0.6	8	8	Nil
	Average of 3	1.9	1.0	0.9	7	6	Nil
	IOWA RIVER AT IOWA CITY						
16662	07-02-80	3.1	3.0	0.1	3	3	Nil
16763	08-01-80	5.2	5.0	0.2	2	2	Nil
16920	09-02-80	2.3	1.2	1.1	7	5	2
	Average of 3	3.5	3.0	0.5	4	3	1

Table 38 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL SURFACE WATER SURVEILLANCE
GROSS ACTIVITY REPORTED AS pCi/l

Data for July, August, September 1980

RADIATION #	DATE SAMPLED	ALPHA ACTIVITY			BETA-GAMMA ACTIVITY		
		TS	DS	SS	TS	DS	SS
		MISSISSIPPI RIVER AT LANSING					
16681	07-07-80	3.4	2.7	0.7	3	3	Nil
16715	07-14-80	3.0	2.4	0.6	5	5	Nil
16736	07-21-80	3.6	1.3	2.3	5	4	1
16756	07-28-80	5.2	4.6	0.6	1	1	Nil
16799	08-04-80	1.8	1.7	0.1	4	3	1
16853	08-18-80	2.1	0.8	1.3	2	2	Nil
16871	08-25-80	4.9	4.6	0.3	1	Nil	1
16927	09-03-80	1.9	1.2	0.7	5	5	Nil
16941	09-08-80	1.3	0.4	0.9	5	4	1
17043	09-15-80	0.8	0.7	0.1	4	4	Nil
17108	09-22-80	1.2	0.5	0.7	5	4	1
17135	09-29-80	0.8	0.4	0.4	4	4	Nil
	Average of 12	2.5	1.8	0.7	4	3	Nil
		MISSOURI RIVER AT SIOUX CITY					
16679	07-07-80	2.2	1.2	1.0	7	7	Nil
16713	07-14-80	2.6	1.8	0.8	5	5	Nil
16734	07-21-80	4.3	3.3	1.0	7	6	1
16755	07-28-80	3.4	2.6	0.8	9	8	1
16800	08-04-80	3.6	2.9	0.7	Nil	Nil	Nil
16808	08-11-80	3.5	2.4	1.1	6	4	2
16854	08-18-80	2.9	2.1	0.8	Nil	Nil	Nil
16873	08-25-80	2.6	1.6	1.0	6	6	Nil
16923	09-02-80	3.8	1.4	2.4	5	5	Nil
16943	09-08-80	5.0	3.7	1.3	3	3	0
17042	09-15-80	2.5	1.4	1.1	6	6	Nil
17107	09-22-80	4.2	2.8	1.4	10	8	2
17137	09-29-80	2.2	1.8	0.4	3	3	Nil
	Average of 13	3.3	2.2	1.1	5	5	Nil

Table 38 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL SURFACE WATER SURVEILLANCE
GROSS ACTIVITY REPORTED AS pCi/l

Data for July, August, September 1980

RADIATION #	DATE SAMPLED	ALPHA ACTIVITY			BETA-GAMMA ACTIVITY		
		TS	DS	SS	TS	DS	SS
		CEDAR RIVER AT VINTON					
16680	07-07-80	0.8	0.3	0.5	2	2	Nil
16714	07-15-80	4.2	3.4	0.8	4	4	Nil
16733	07-21-80	1.7	1.4	0.3	3	2	1
16758	07-28-80	2.7	1.2	1.5	3	3	Nil
16797	08-04-80	0.6	0.5	0.1	4	4	Nil
16809	08-11-80	0.9	0.8	0.1	3	3	Nil
16852	08-18-80	1.1	1.1	Nil	4	4	Nil
16872	08-25-80	3.4	3.0	0.4	6	3	3
16924	09-02-80	4.6	3.6	1.0	4	3	1
16945	09-08-80	3.3	1.6	1.7	5	5	Nil
17041	09-15-80	1.7	1.3	0.4	4	3	1
17109	09-24-80	1.9	0.5	1.4	7	4	3
17136	09-29-80	2.1	1.1	1.0	4	3	1
	Average of 13	2.2	1.5	0.7	4	3	1

Table 39

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL ANALYSIS
D.E.Q. MINERAL SAMPLES

Data for July 1980

TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	pCi/l	
					ALPHA	BETA
DEQ Region 2	Cerro Gordo	NWSPC Co., Lagoon	15570	10-17-79	7.9	1191.0
Blencoe	Monona	Well #1, 85'	15575		15.8	Nil
Blencoe	Monona	Well #2, 85'	15576	10-18-79	3.6	10
New Albin	Allamakee	Raw water	15579	10-22-79	9.6	2
Tabor	Fremont	Well #2, 62'	15587	10-24-79	3.1	5
Tabor	Fremont	Well #1, 62'	15589	10-24-79	6.0	9
Shenandoah	Page	Well #20	15590	10-25-79	14.2	16
Logan	Harrison	Well #7, 60'	15620	11-06-79	13	Nil
Blairstown	Benton	Well #1, Raw water	15640	11-15-79	5.4	17
Badger	Webster	Well #3, Raw	15656	11-15-79	6.0	3
South English	Keokuk	Well #4, 330'	15663	11-29-79	11	13
Bancroft	Kossuth	Well #2	15669	12-05-79	5.9	3.0
Blue Grass	Iowa	Well #2, 640'	15671	12-06-79	3.8	5
Clarion	Wright	Well #1	15672	12-06-79	5.4	1
Van Horne	Benton	Well #2, 1870'	15674	12-10-79	10.7	7
Lansing	Allamakee	Weel #2, 805'	15676	12-10-79	3.9	8
Lowden	Cedar	Well #1, 1500'	15683	12-11-79	3.2	14

Tab 9 (inue ,

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL ANALYSIS
D.E.Q. MINERAL SAMPLES
Data for July 1980

TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	pCi/1 ALPHA	pCi/1 BETA
Fenton	Kossuth	Well #1, 229'	15688	12-12-79	4.8	1
Deloit	Crawford	Well #4, 53'	15690	12-12-79	3.7	1
Blairsburg	Hamilton	Well #1, 350'	15701	12-19-79	10.0	Nil
Panama MWS	Shelby	Well #1, 39'	15703	12-20-79	8.4	Nil
Panama	Shelby	Well #2, 40'	15704	12-20-79	3.9	1
Panama	Shelby	Well #4, 40'	15706	12-20-79	3.6	Nil
Delaware	Delaware	Well #1, 335'	15714	12-26-79	3.0	4
Ledyard	Kossuth	Well #1	15715	12-27-79	4.7	2
Wesley	Kossuth	Well #1, 1035'	15732	01-08-80	4.3	4
Wesley	Kossuth	Well #2, 302'	15733	01-08-30	3.6	4
Donahue	Scott	Well #1, 407'	15734	01-08-80	3.9	Nil
Perry	Dallas	Composite Wells #11, 12,13,14,15,16,17,19	15737	01-07-80	9.2	13
Lake Mill	Winnebago	Well #2, 425'	15741	01-10-80	3.3	3
Magnolia	Harrison	Well #1, 235'	15743	01-10-80	11.1	5
Ringsted	Emmet	Well #4, raw	15764	01-14-80	7.3	3
Graettinger	Palo Alto	Well #5, raw	15770	01-14-80	7.3	52

Table 39 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL ANALYSIS
D.E.Q. MINERAL SAMPLES
Data for July 1980

TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	pCi/l ALPHA	pCi/l BETA
Badger	Webster	Well #2, raw	15772	01-14-80	5.9	Nil
Pleasantville	Marion	Well #1, 2405'	15778	01-17-80	8.8	18
Dallas Melche	Marion	Well #1, 2500'	15730	01-17-80	5.1	18
Dayton	Webster	Well #2, 1240'	15783	01-21-80	13.0	6
Independence	Buchanan	Well MH! East	15785	01-22-80	0.9	3
Odebolt	Sac	Well #8, 2131'	15796	01-22-80	3.7	13
Rockwell City	Calhoun	Well #5, 1965'	15797	01-22-80	10.0	22
Farnhamville	Calhoun	Well #1, 776'	15798	01-22-80	6.9	4
Lohrville	Calhoun	Well #3, 645'	15799	01-22-80	2.3	Nil
Mechanicsville	Cedar	Well #3, 455'	15800	01-24-80	3.0	3
Stanton	Montgomery	Well #2, 150'	15802	01-23-80	5.7	Nil
Stanton	Montgomery	Well #1, 158'	15803	01-23-80	1.6	1
Preston	Jakcson	Well #1, 720'	15805	01-24-80	1.8	5
Andrew	Jackson	Well #1, 250'	15806		1.2	5
Linneville	Jasper	Well #3	15817	01-29-80	9.5	Nil
Clermont	Fayette	Well #2, 240'	15819	01-29-80	1.5	3
Grafton	Worth	Well #2, 295'	15820	01-29-80	2.9	Nil

Table 39 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL ANALYSIS
D.E.Q. MINERAL ANALYSIS

Data for July 1980

TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	pCi/l ALPHA	pCi/l BETA
Grafton	Worth	Well #1, 186'	15821	01-29-80	1.9	3
Grinnell	Poweshiek	Well #8, Jordan	15825	01-31-80	9.1	12
Sloan	Wood	Well #3, 97'	15826	01-30-80	3.4	9
Smithland	Woodbury	Well #1, 65'	15827		3.2	10
Springbrook	Jackson	Well #1, 1035'	15828	01-31-80	2.4	2
Baldwin	Jackson	Well #1, 160'	15829	01-31-80	2.1	4
Hornick	Woodbury	Well #2	15830	01-30-80	1.2	3
Williamsburg	Iowa	Well #5, 270'	15831	01-31-80	0.9	4
Batavia	Jefferson	Well #1, 100'	15844	02-06-80	1.7	Nil
Richland	Keokuk	Well #1, 1870'	15845	02-07-80	22.5	23
Grandview	Louisa	Well, raw water	15857	02-12-80	1.5	Nil
Goldfield	Wright	Well #1, 200'	15866	02-14-80	1.9	2
Dayton	Dallas	Well #2, 430' FEE	16278	06-11-80	1.9	7

Table 40

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL ANALYSIS
DEQ MINERAL SAMPLES

Data for July 1980

TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	pCi/l			
					ALPHA	BETA	^{226}Ra	^{228}Ra
St. Charles	Madison	Well #2, 51' FEE	15352	07-10-79	0.7			
New Liberty	Scott	Well #1, 210'	15735	01-08-80	2.7	3		
Glidden	Carroll	Well #6, 171'	15861	02-13-80	1.5	8		
Bridgewater	Adair	Well #2	15864	02-14-80	0.9	1		
Hampton	Franklin	Well #3	15865	02-13-80	1.1	10		
Freeport	Winneshiek	Well #1, 400'	15868	02-14-80	1.0	4		
Belmond	Wright	Well #1	15870	02-14-80	1.7	4		
Stockton	Muscatine	Well	15872	02-18-80	1.2	4		
Maysville	Scott	Well	15873		1.3	3		
Atalisa	Muscatine	Well	15875	02-19-80	2.1	5		
Mallard	Palo Alto	Raw well	15877	02-18-80	2.9	2		
Rockford	Floyd	Well #1, 185'	15887	02-20-80	0.8	3		
Rockford	Floyd	Well #2, 215'	15891	02-22-80	0.3	2		
Malvern	Mills	Well #9	15909	02-28-80	1.3	Nil		
Coralville	Johnson	Well #6	15913	02-28-80	1.5	2		
Oxford	Johnson	Well	15915	03-03-80	0.9	11		

Table 40 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL ANALYSIS
DEQ MINERAL SAMPLES

Data for July 1980

TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	pCi/l			
					ALPHA	BETA	^{226}Ra	^{228}Ra
Ladora	Iowa	Well	15916	03-03-80	2.7	Nil		
Shelby	Shelby	Well #6, 57'	15932	03-06-80	2.8	Nil		
Muscatine	Muscatine	Well 323', FEE	16219	05-15-80	2.0	10	1.0	<0.6
Rural Water System	Cherokee	Well #MC3, 376' FEE	16234	05-22-80	4.3	15	<0.2	1.4
Iowa City	Johnson	Well #D-39, 500'	16270	05-30-80	5.6	4	0.7	<0.6
Iowa City	Johnson	Well #D-40	15271	06-09-80	12.1	6	1.1	1.3
Iowa City	Johnson	Well #D-41	16301		6.0	19	2.0	2.4
Barnum	Webster	New well FEE	16315	06-26-80	4.7	5		

Table 41

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL ANALYSIS
SDWA SAMPLES

Data for July 1980

					pCi/1			
TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	ALPHA	BETA	^{226}Ra	^{228}Ra
Exira	Audubon	Finished	14720A	11-19-79 02-19-80	3.3	6	<0.2	<0.6
Lanesboro	Carroll	Well #2, 148'	14992A	04-30-79 08-14-79 11-19-79 02-12-80	2.7	6	0.6	<0.6
Runnells	Polk	Well #1, 2500'	14994A	04-30-79 08-07-79 11-27-79	12	18	4.1	0.2
Homestead	Iowa	Well #17	15088A	05-22-79 08-24-79	6.0	15	4.7	2.0
Neola	Pottawattamie	Well #4, 112'	15101A	05-29-79 08-28-79 12-03-79 03-31-80	4.6	7	0.5	2.3
Cleghorn	Cherokee	Well #2, 430'	15156A	06-04-79 10-02-79 04-03-80 06-23-80	0.4	9		

Table 41 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL ANALYSIS
SDWA SAMPLES

Data for July 1980

					pCi/l			
TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	ALPHA	BETA	^{226}Ra	^{228}Ra
Pierson	Woodbury	Well #1, 26' Well #2, 29'	15166A	09-17-79 12-11-79 03-25-80	4.3	8	<0.1	1.2
Hardy	Humboldt	Well #1, 90'	15193A	06-11-79 08-30-79 11-13-79 02-04-80	14	7	5.4	0.8
Odebolt	Sac	Well #8, 2131'	15194A	06-11-79 09-11-79 12-17-79 03-31-80	23	51	6.2	<0.6
Castalia	Winnishiek	Well #1, 1000'	15226A	06-18-79 11-13-79 03-10-80 06-09-80	2.8	3	2.0	.09
Stanhope	Hamilton	Well #3, 585'	15229A	06-05-79 12-17-79 04-08-80 06-18-80	5.1	15	1.3	1.1
Hull	Sioux	Finished	15233A	06-19-79 10-02-79 12-11-79 03-31-80	7.6	24	2.5	1.7

Table 41 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL ANALYSIS
SDWA SAMPLES

Data for July 1980

					pCi/l			
TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	ALPHA	BETA	^{226}Ra	^{228}Ra
Ankeny	Polk	Well #1, 575'	15241A	06-19-79 09-19-79 12-21-79 03-17-80	5.1	7	0.5	<0.6
Ankeny	Polk	Well #1, 105'	15243A	06-19-79 09-19-79 12-21-79	2.4	5	0.8	0.7
Ankeny	Dallas	Well #1, 500' Well #2, 675'	15244A	09-20-79 12-21-79 03-17-80	17.0	10	8.3	2.1
Smithland	Woodbury	Well #1, 95'	15245A	06-18-79 09-20-79 03-03-80 06-10&11-80	5.6	5	0.5	<0.6
Pocahontas	Pocahontas	Finished	15285A	09-18-79 12-24-79 03-20-80	5.7	13	1.1	1.2
Holmes	Wright	Well #1, 200'	15316A	06-26-79 09-18-79 12-18-79 03-11-80	6.1	11	5.9	1.3

Table 41 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL ANALYSIS
SDWA SAMPLES

Data for July 1980

					pCi/l			
TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	ALPHA	BETA	^{226}Ra	^{228}Ra
West Liberty	Cedar	Well 400'	15331A	07-17-79 12-11-79 03-10-80 06-09-80	4.5	11	0.7	2.0
Dow City	Crawford	Finished	15349A	07-09-79 10-09-79 01-21-80 04-15-80	6.2	10	0.2	1.9
Maquoketa	Jackson	Finished	15512A	09-19-79 12-12-79 03-11-80 06-09-80	3.9	10	2.9	3.7

Table 41 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL ANALYSIS
SDWA SAMPLES

Data for July 1980

TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	pCi/l			
					ALPHA	BETA	^{226}Ra	^{228}Ra
Shellsburg	Benton	Well #1, 1726'	14873A	03-20-79 07-19-79 10-16-79 04-14-80	3.9	8	1.6	<0.6
Ute	Monona	Well #3, 60'	14895A	03-27-79 08-07-79 11-26-79	3.4	3	0.5	0.4
Churdan	Greene	Well #1401 pm, 160'	14936A	04-16-79 07-24-79 11-20-79 04-07-80	9.1	Nil	0.6	<0.4
Marion	Linn	Finished	15017A	05-07-79 08-13-79 11-26-79 02-25-80	2.9	10	2.4	<0.4
Clinton	Clinton	Finished	15076A	05-22-79 08-27-79 12-11-79 03-10-80	2.9	17	2.1	<0.7
West Bend	Palo Alto	Well #4, 1360'	15085A	05-22-79 08-29-79 11-26-79 02-11-80	15.2	33	8.9	3.4

Table 41 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL ANALYSIS
SDWA SAMPLES

Data for July 1980

OWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	pCi/l			
					ALPHA	BETA	^{226}Ra	^{228}Ra
lleman	Polk	Well #1, 660'	15086A	05-22-79 08-20-79 11-19-79 03-03-80	7.1	10	1.2	<0.4
est Amana	Iowa	Well #11	15087A	05-22-79 08-24-79 01-28-80	2.8	3	0.1	<0.4
ort Dodge	Webster	Well #17, 15, 12, 9, 8	15121A	06-04-79 09-04-79 12-04-79 03-11-80	13.7	7	3.8	1.1
eWitt	Clinton	Well #5, 1421'	15130A	05-04-79 09-18-79 12-11-79 03-10-80	5.0	17	2.0	<0.6
urray	Clark	Well 2700'	15131A	06-05-79 09-05-79 12-03-79 03-04-80	16.1	21	7.2	0.7
ason City	Cerro Gordo	Well #1	15142A	09-11-79 02-18-80 04-08-80	4.5	Nil	0.7	<0.7

Table 41 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL ANALYSIS
SDWA SAMPLES

Data for July 1980

TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	pCi/l			
					ALPHA	BETA	^{226}Ra	^{228}Ra
Casey	Guthrie	Finished	15158A	06-11-79 09-25-79 01-03-80	2.8	Nil	0.1	0.7
Hedrick	Keokuk	Well #2, 2050'	15163A	06-11-79 09-17-79 12-17-79 03-17-80	4.0	20	3.0	<0.6
Bagley	Guthrie	Well 95'	15164A	06-11-79 09-10-79 12-04-79 03-24-80	4.8	11	1.5	<0.7
Searsboro	Poweshiek	Well #1, 110'	15165A	06-12-79 09-10-79 12-18-79	3.2	11	1.6	<0.6
Liscomb	Marshall	Well #2, 168'	15189A	09-04-79 11-27-79 02-20-80	2.5	4	0.6	<0.7
Minburn	Dallas	Finished	15191A	06-13-79 10-17-79 01-15-80 04-02-80	3.6	1	<0.2	<0.7

Table 41 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
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SDWA SAMPLES

Data for July 1980

					pCi/l			
TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	ALPHA	BETA	^{226}Ra	^{228}Ra
Boxholm	Boone	Well #1, 1949'	15192A	06-12-79 09-17-79 12-03-79 03-03-80	5.1	14	3.2	<0.7
Charles City	Floyd	Well #1, 300'	15264A	06-19-79	3.0	Nil	0.4	<0.6
Battle Creek	Ida	Finished	15324A	06-13-79 09-17-79 12-17-79 03-03-80	2.5	3	0.4	<0.6
Wheatland	Clinton	Well #1, 1328'	15398A	08-06-79 09-12-79 01-02-80 03-24-80	3.8	11	2.2	0.2

Table 41 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL ANALYSIS
SDWA SAMPLES

Data for July 1980

					pCi/l			
TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	ALPHA	BETA	^{226}Ra	^{228}Ra
Collins	Story	Well #3, 2535'	15051A	05-14-79 08-21-79 11-28-79 01-14-80	16.1	22	6.9	3.7
Stuart	Guthrie	Finished	15056A	05-14-79 08-13-79 11-13-79 02-19-80	17.8	58	13.2	2.8
Linn Grove	Buena Vista	Well #3, 45'	15058A	05-14-79 08-14-79 11-13-79 02-15-80	6.6	8	0.3	0.9
Toledo	Tama	Well #7, 2016'	15061A	05-15-79 09-10-79 11-19-79 02-11-80	5.7	30	5.0	2.3
Arion	Crawford	Well #2, 42'	15064A	05-14-79 08-06-79 11-05-79 02-05-80	16.1	30	0.1	1.2
Cushing	Woodbury	Well #1, 40'	15069A	05-14-79 08-13-79 11-13-79 01-14-80	2.4	7	0.1	0.7

Table 41 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
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Data for July 1980

TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	pCi/l			
					ALPHA	BETA	^{226}Ra	^{228}Ra
Rose Hill	Mahaska	Finished	15083A	05-23-79 08-21-79 11-20-79 02-19-80	3.9	4	1.7	1.9
Britt	Hancock	Well #1, 296'	15128A	06-04-79 09-04-79 12-03-79 03-03-80	2.6	4	1.1	0.8
Atkins	Benton	Well #1, 456'	15129A	06-04-79 09-17-79 12-18-79 04-08-80	4.7	9	4.6	2.0
Fredericksburg	Chickasaw	Well 185'	15133A	06-05-79 10-29-79 03-17-80 06-16-80	1.0	2		
Ankeny	Polk	Well #1&2, 25'	15252A	06-19-79 09-19-79 12-21-79 03-17-80	3.4	Nil	0.1	1.3
Dunlap	Harrison	Well #1&2, 85'	15257A	06-19-79 09-06-79 12-18-79 03-18-80	4.9	9	1.4	2.0

Table 41 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
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SDWA SAMPLES

Data for July 1980

					pCi/l			
TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	ALPHA	BETA	^{226}Ra	^{228}Ra
Twin Lake	Calhoun	Well #1, 139'	15275A	06-19-79 10-31-79 03- -80 06-10-80	1.8	7		
Elberon	Tama	Well #1, 655'	15304A	06-26-79 12-31-79 03-06-80	3.7	10	2.2	3.1
Muscatine	Muscatine	Well 60'	15432A	08-14-79 12-03-79 03-03-80 06-09-80	1.5	1		
Des Moines	Des Moines	Well 198'	15475A	08-28-79 11- -79 03-04-80 05-29-80	0.5	Nil		
Evansdale	Black Hawk	Well #3, 305'	15522A	09-25-79 12-18-79 03-18-80 06-16-80	1.1	1		

Table 42

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL ANALYSIS
DEQ MINERAL SAMPLES

Data for August 1980

TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	pCi/l	
					ALPHA	BETA
Soldier	Monona	Well 800'	14805	03-08-79	4.6	64 ^{90}Sr = <0.41 pCi/l
Maquoketa	Jackson	Well #3, 60'	15880	02-19-80	1.2	1
Lamotte	Jackson	Well #1, 865'	15903	02-27-80	2.1	15
Roland	Story	Well South	15934	03-07-80	1.7	6
Epworth	Dubuque	Well #2	15939	03-04-80	0.5	5
Epworth	Dubuque	Well #3	15940	03-04-80	1.9	2
Epworth	Dubuque	Well #4	15941	03-04-80	1.1	3
Eddyville	Wapello	Well	15949	03-11-80	1.5	4
Edgewood	Clayton	Well #1, 260'	15956	03-12-80	1.7	Nil
Edgewood	Clayton	Well #2, 268'	15957	03-12-80	0.6	1
D-21 Sample #	Johnson	FEE	15969	03-12-80	20.6	55 ^{90}Sr = <0.41 pCi/l
Cascade	Dubuque	Well #4, 244'	15970	03-17-80	1.0	Nil
Amber	Jones	Well #1, 405'	15971	03-17-80	1.1	3
Paullina	O'Brien	Well #5	15977	03-17-80	1.1	5.1
Strawberry Point	Clayton	Well #4, 240'	15981	03-18-80	0.3	Nil

Table 42 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
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DEQ MINERAL SAMPLES

Data for August 1980

TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	pCi/l ALPHA	pCi/l BETA
Plainfield	Bremer	Well #1, 150'	15988		1.0	Nil
Strawberry Point	Clayton	Well #3, 259'	15982	03-18-80	2.0	2
Winthrop	Buchanan	Well 230'	15990	03-16-80	1.7	4
Schleswig MWS	Crawford	Well #2	15992	03-20-80	2.3	7
Rock Valley	Sioux	Well #3	15993	03-20-80	2.7	8
Gilmore City	Pocahontas	Well #3	15994	03-21-80	1.1	4
Palmer	Pocahontas	Ground water	15996	03-21-80	1.5	12
Wilton	Muscatine	Well #2	15998	03-25-80	0.9	3
Kirkman	Shelby	Well #1, 551'	16000		1.1	3
Plymouth	Cerro Gordo	Well #1, 268'	16004	03-26-80	1.9	3
Avoca MWS	Pottawattamie	Well #4, 30'	16007	03-27-80	1.2	11
Avoca	Pottawattamie	Well #5	16008	03-27-80	2.0	4
Osage	Mitchell	Well #4, 710'	16010	03-26-80	2.0	2
Osage	Mitchell	Well #2, 676'	16012	03-26-80	2.5	4
Danbury	Woodbury	Well #4	16013	03-27-80	2.0	5
Solon	Johnson	Well #2	16021	04-01-80	1.2	2

Table 42 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL ANALYSIS
DEQ MINERAL SAMPLES
Data for August 1980

TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	pCi/l	
					ALPHA	BETA
Klemme	Hancock	Well #1, 1512'	16025	04-02-80	2.0	6
Center Point	Linn	Well #4, 470'	16030	04-03-80	2.4	5
Delta	Keokuk	Well #8	16040	04-08-80	1.2	Nil
Alexander	Franklin	Well # East, 220'	16042	04-09-80	1.2	2
Sabula	Jackson	Well #2, 100'	16045	04-08-80	1.7	1
Britt	Hancock	Well #1	16053	04-11-80	2.5	4
Britt	Hancock	Well #2	16054	04-11-80	0.9	4
Britt	Hancock	Well #3	16055	04-11-80	2.9	4
Westgate	Fayette	Well #1, 98'	16092	04-21-80	0.9	13
Ossian	Winneshiek	Well #1, 984'	16130	04-28-80	1.8	1
Woden	Hancock	Well #1	16136		1.6	5
Ft. Atkinson	Winneshiek	Well #1	16137	04-29-80	1.0	3
Goodell	Hancock	Well #2	16138		Nil	3
Goodell	Hancock	Well #1, 192'	16139		2.4	3
Garner	Hancock	Well #2	16140		1.2	Nil
Garner	Hancock	Well #1	16141		2.1	2

Table 42 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
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DEQ MINERAL SAMPLES

Data for August 1980

TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	pCi/l	
					ALPHA	BETA
Harper	Keokuk	Well #4, 113'	16146	04-30-80	1.4	11
Ames	Story	Well #15	16161	05-06-80	0.4	6
Ames	Story	Well #16	16162	05-06-80	1.2	6
Boyden	Sioux	Well #5	16167	05-05-80	2.1	9
Spillville	Winneshiek	Well #1, 545'	16169	05-06-80	1.1	1
South Amana	Iowa	Well #12, 28'	16172	05-06-80	0.4	3
Princeton	Scott	Well #1, 455'	16180	05-08-80	0.8	2
Wellsburg	Grundy	Well #3	16185	05-08-80	1.2	7
Carlise	Warren	Well #4	16190	05-13-80	1.0	4
LaPorte City	Black Hawk	Well #2, 250'	16192	05-13-80	2.4	12
Dows	Wright	Well #4	16195	05-13-80	1.1	6
Dows	Wright	Well #5, 752'	16196	05-13-80	0.4	10
Denver	Bremer	Well #3, 180'	16199	05-13-80	0.6	4
Denver	Bremer	Well #4, 1000'	16200	05-13-80	2.5	14
Anamosa	Jones	Well #1, 350'	16202	05-14-80	2.4	Nil
Anamosa	Jones	Well #2, 405'	16203	05-14-80	1.6	4

Table 42 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
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DEQ MINERAL SAMPLES

Data for August 1980

TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	pCi/l ALPHA	pCi/l BETA
Audubon	Audubon	Well #18	16205	05-13-80	2.2	1
Audubon	Audubon	Well #19	16206	05-13-80	1.8	2
Ridgeway	Winneshiek	Well #2, 590'	16208	05-14-80	1.2	Nil
Marshalltown	Marshall	Well #9, 270'	16214	05-15-80	2.5	1
Marshalltown	Marshall	Well #7, 250'	16215	05-15-80	2.1	3
Everly	Clay	Well #3	16230	05-22-80	1.2	10
Kanawha	Hancock	Well #1	16242	05-28-80	1.8	2
Farmington	Van Buren	Well #1, 38'	16241	05-29-80	2.4	1
St. Charles	Madison	Well #3, 51'	16248	06-03-80	0.9	2
South Amana	Iowa	Well #13,14,15,16-90'	16250	06-03-80	1.2	7
Middle Amana	Iowa	Well #8, 36'	16252	06-03-80	2.1	Nil
Main Amana	Iowa	Well	16253	06-03-80	2.0	4
Elgin	Fayette	Well #2, 220'	16255	06-04-80	1.5	Nil
Elgin	Fayette	Well #3, 150'	16257	06-04-80	1.9	3
East Amana	Iowa	Well #2, 550'	16261	06-05-80	1.7	7
Bristow	Butler	Well #1, 165'	16262	06-05-80	1.6	Nil

Table 42 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL ANALYSIS
DEQ MINERAL SAMPLES

Data for August 1980

					pCi/l	
TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	ALPHA	BETA
New Hartford	Butler	Well #1, 180'	16265	06-03-80	0.8	2
New Hartford	Butler	Well #2, 165'	16266	06-03-80	1.6	Nil
Oyens	Plymouth	Well #1, 215'	16268	06-05-80	0.3	7
Spillville	Winneshiek	Well #2, 364'	16170	05-06-80	2.2	4
Baxter	Poweshiek	Well #2, 65'	16279	06-12-80	1.7	1
Baxter	Poweshiek	Well #1, 58'	16280	06-12-80	1.7	1
Harcourt	Webster	Well #1, 1249'	16281	06-11-80	1.6	16
Fostoria	Clay	Well East, 563'	16282	06-13-80	2.4	4
Ferguson	Marshall	Well #2, 160'	16284	06-13-80	0.4	7
Moorland	Butler	Well #1, 747'	16286	06-17-80	2.0	8
Gowrie	Webster	Well #1, 1846'	16287	06-11-80	2.4	15
Gowrie	Webster	Well #5, 1856'	16288	06-11-80	2.3	8
Ft. Madison	Lee	Well #1, 156'	16296	06-17-80	2.1	2
Martensdale	Warren	Well #1	16298	06-19-80	2.4	5
Grand Junction	Green	Well #2, 362'	16306	06-23-80	2.3	Nil
Parkersburg	Butler	Well #1, 280'	16307	06-23-80	0.5	Nil

Table 42 (Continued)

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IOWA CITY, IOWA
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DEQ MINERAL SAMPLES

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TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	pCi/l	
					ALPHA	BETA
Parkersburg	Butler	Well #2, 310'	16308	06-23-80	1.0	Nil
Massena	Cass	Well #79-1	16312	06-26-80	0.4	2
Massena	Cass	Well #79-2, 35'	16313	06-26-80	1.2	Nil
Palo	Linn	Well #4, 285'	16314	06-25-80	1.8	Nil
Duncombe	Webster	Well #1, 972'	16316	06-26-80	2.0	2
Otho	Webster	Well #2, 1045'	16317	06-26-80	0.5	4
Blue Grass	Scott	Well #2	16319	06-24-80	0.4	Nil
Blue Grass	Scott	Well #1	16320	06-24-80	1	1
Vincent	Webster	Well #2, 745'	16323	06-28-80	2.0	3
Vincent	Webster	Well #3	16324	06-28-80	1.9	Nil
Rippey	Greene	Well #1, 135'	16330	07-01-80	2.3	3
Allison	Butler	Well #1, 284'	16344	07-07-80	1	Nil
Lowden	Cedar	FEE	16359		0.8	2
Duncombe	Webster	Well #2, 585'	16365	07-10-80	2.0	Nil
Renwick	Humboldt	Well #2, 226'	16382	07-11-80	2.7	4
Onawa	Monona	Well New Well FEE	16437	07-22-80	1.2	7

Table 43

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					pCi/l			
TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	ALPHA	BETA	^{226}Ra	^{228}Ra
Perry	Dallas	Finished	14957A	04-17-79 07-09-79 11-05-79 04-07-80	4.1	Nil	0.4	<0.6
Audubon	Audubon	Well 32'	14965A	04-23-79 09-28-79 12-31-79 07-21-80	1.5	3		
Mason City	Cerro Gordo	M.C. High School	14993A	04-30-79 08-06-79 11-05-79 02-11-80	10.5	11	5.6	1.6
Ocheyedan	Osceola	Well #1, 35'	14997A	04-30-79 08-13-79 11-26-79 04-07-80	2.0	Nil	<0.2	<0.6
Van Horne	Benton	Well 695'	14999A	04-30-79 08-01-79 12-03-79 07-25-80	5.9	25	3.3	1.0
Gilmore City	Pocahantas	Well #3, 203'	15013A	04-30-79 07-23-79 10-15-79 04-07-80	3.7	3	<0.2	2.1

Table 43 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL ANALYSIS
SDWA SAMPLES

Data for August 1980

TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	pCi/l			
					ALPHA	BETA	^{226}Ra	^{228}Ra
Sheldon	O'Brien	Finished	15018A	05-07-79 08-27-79 12-03-79 03-03-80	11.1	12	0.4	2.3
Hawarden	Sioux	Well #8-7-6-5-3, 40'	15059A	05-14-79 08-13-79 11-05-79 02-11-80	4.3	14	<0.2	<0.6
Hawarden	Sioux	Well #1&2	15060A	05-14-79 08-13-79 11-05-79 02-11-80	6.3	12	<0.2	<0.6
LaMotte	Jackson	Well #1, 865'	15062A	05-15-79 08-13-79 11-13-79 02-12-80	3.6	11	2.0	<0.6
Manly	Worth	Finished	15066A	05-15-79 08-13-79 11-13-79 02-12-80	2.1	Nil	0.8	<0.5
Estherville	Emmet	Well #4, 7, 9 & 10, 700' to 750'	15070A	05-15-79 08-14-79 11-12-79 02-11-80	4.6	9	0.2	<0.6

Table 43 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL ANALYSIS
SDWA SAMPLES

Data for August 1980

					pCi/l			
TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	ALPHA	BETA	^{226}Ra	^{228}Ra
Hudson	Black Hawk	424 2nd Street	15071A	05-21-79 08-20-79 11-26-79 07-28-80	Nil	8		
Swea City	Kossuth	Well 471'	15084A	09-05-79 03-18-80	3.1	3	0.2	<0.6
East Amana	Iowa	Well #2	15091A	05-22-79 08-24-79	3.8	12	2.4	1.2
South Amana	Iowa	Well #13, 14, 15 & 16	15092A	05-22-79 08-24-79 01-28-80	3.0	Nil	0.3	<0.6
Harcourt	Webster	Finished	15103A	05-30-79 09-28-79 03-04-80 07-09-80	4.7	20	2.5	<0.6
Lester	Lyon	Finished	15159A	06-11-79 10-10-79 01-14-80 05-05-80	2.0	11	0.3	0.8

Table 43 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL ANALYSIS
SDWA SAMPLES

Data for August 1980

					pCi/l			
TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	ALPHA	BETA	^{226}Ra	^{228}Ra
Rhodes	Marshall	Well #1, 300'	15185A	06-12-79 09-17-79 12-18-79 07-22-80	1	Nil		
Farley	Dubuque	Well #2, 1230'	15201A	06-11-79 09-11-79 12-13-79 03-12-80	6.3	11	2.3	1.1
Cedar Co. Care Facility	Cedar	Finished	15202A	06-12-79 11-19-79 02-08-80 05-13-80	5.4	Nil	1.1	<0.6
Osage	Mitchell	Well #5, 710'	15203A	06-12-79 09-17-79 12-12-79 04-24-80	3.2	2	0.5	<0.6
St. Olaf	Clayton	Well #2, 380'	15225A	06-18-79 08-13-79 10-09-79 05-07-80	4.7	5	2.9	2.5
Prescott	Adams	Well #1, 45'	15223A	06-18-79 09-17-79 12-18-79 03-25-80	3.1	Nil	<0.2	<0.6

Table 43 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL ANALYSIS
SDWA SAMPLES

Data for August 1980

					pCi/l			
TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	ALPHA	BETA	^{226}Ra	^{228}Ra
Scotch Grove	Jones	Well # U.S. 1; 357'	15236A	06-18-79 09-17-79 12-17-79 07-28-80	0.2	Nil		
Manning	Carroll	Finished	15240A	06-18-79 09-24-79 01-08-80	5.2	Nil	<0.2	<0.6
McBride Cottage Reserve	Johnson	Finished	15253A	06-19-79 09-18-79 12-26-79 03-11-80	2.1	4	<0.2	<0.6
Cedar Falls	Grundy	Well 270'	15255A	06-19-79 10-02-79 01-29-80 04-08-80	2.5	1	0.2	1.3
Beaver	Boone	Well #1, 100'	15261A	06-19-79 09-25-79 01-29-80 03-25-80	3.2	7	0.7	<0.6
Slater	Story	Well #3, 223'	15273A	06-18-79 09-25-79 01-02-80 04-08-80	2.9	6	0.5	<0.6

Table 43 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL ANALYSIS
SDWA SAMPLES

Data for August 1980

					pCi/l			
TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	ALPHA	BETA	^{226}Ra	^{228}Ra
Kimballton	Audubon	Well #5, 40'	15277A	06-18-79 10-02-79 12-18-79 07-30-80	1.2	1		
Ricketts	Crawford	Well #2, 30'	15284A	06-19-79 09-18-79 12-12-79 03-19-80	3.5	8	0.4	1.4
Lansing	Allamakee	Well 80'	15287A	09-18-79 02-11-80 06-09-80	2.5	Nil	<0.2	<0.6
Dayton	Webster	Well #3, 1250'	15289A	06-25-79 09-10-79 12-10-79 04-01-80	5.4	13	<0.2	0.9
Wiota	Cass	Well 147'	15290A	06-25-79 11-29-79 02-18-80 04-18-80	2.1	3	0.3	<0.6
Keokuk	Lee	Well 213'	15305A	06-26-79 09-10-79 03-31-80	2.4	3	1.6	<0.6

Table 43 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL ANALYSIS
SDWA SAMPLES

Data for August 1980

					pCi/1			
TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	ALPHA	BETA	^{226}Ra	^{228}Ra
Keokuk	Lee	Finished	15312A	09-13-79 12-11-79	2.2	2	1.5	1.1
Dubuque	Dubuque	Well 400'	15333A	07-02-79 07-22-79 02-18-80 04-07-80 06-23-80	1.8	Nil		
Dubuque	Dubuque	Well #1, 296'	15334A	07-02-79 10-08-79 01-29-80 05-06-80	2.1	2	2.0	<0.6
Dallas	Marion	Well #1, 2400'	15341A	07-09-79 10-01-79 01-07-80 03-03-80	4.9	15	2.8	1.1
Twin Valley Lakes	Johnson	Finished	15348A	07-09-79 10-22-79 01-10-80 04-25-80	3.1	2	<0.1	<0.6
Spillville	Winneshiek	Finished	15360A	07-10-79 10-30-79 05-12-80 07-15-80	0.3	Nil		

Table 43 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL ANALYSIS
SDWA SAMPLES

Data for August 1980

TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	pCi/l			
					ALPHA	BETA	^{226}Ra	^{228}R
Fort Dodge	Webster	Well #1&2, 430'	15367A	07-16-79 11-30-79 01-02-80 03-24-80	3.7	13	2.8	<0.6
Rockwell City	Calhoun	Finished	15369A	07-17-79 10-28-79 01- -80 04-01-80	10.2	17	1.3	<0.6
Lockridge	Jefferson	Well #2, 1100'	15391A	07-30-79 02-25-80 06-13-80	19.9	23	11.3	2.5
Lawton	Woodbury	Finished	15413A	07-24-79 10- -79 04-01-80	3.4	12	3.3	2.1
Coralville Lake Manor	Johnson	Well #1&2, 180', 240'	15428A	08-13-79 11-26-79 02-12-80 05-12-80	5.5	5	1.6	<1.6
Newell	Buena Vista	Well #4, 293'	15431A	04-14-79 11-14-79 03-12-80 06-16-80	4	2	0.4	<0.6

Table 43 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
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SDWA SAMPLES

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TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	pCi/l			
					ALPHA	BETA	^{226}Ra	^{228}Ra
Benton Co. Care Facility	Benton	Well 400'	15433A	08-14-79 12-11-79 04-15-80 07-08-80	1.5	16		
Valley Hill Court	Dubuque	Well 286'	15444A	08-21-79 11-20-79 02-18-80 05-27-80	3.9	Nil	1.8	0.8
Holiday Lake Water System, L.T.D.	Poweshiek	Well #1, 429' #2, 412'	15527A	09-30-79 12-17-79 04-07-80 06-24-80	2.0	6	<0.2	<0.6
Clermont	Fayette	Well #2, 240'	15523A	10-01-79 01-08-80 04-01-80 07-07-80	0.9	3		
Rock Valley	Sioux	Well #4, 70'	15539A	10-08-79 01-07-80 04-07-80 07-14-80	1.1	3		
Goodell	Hancock	Well #1, 190'	15544A	10-09-79 01-14-80 05-13-80 07-15-80	0.6	Nil		
Blockton	Taylor	Finished	15545A	10-09-79 01-28-80 04-07-80 07-07-80	1.1	3		

Table 43 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
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SDWA SAMPLES

Data for August 1980

					pCi/l			
TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	ALPHA	BETA	^{226}Ra	^{228}Ra
Ellsworth	Hamilton	Well #3, 365'	15571A	10-16-79 01-14-80 04-08-80 07-14-80	1	3		
Northwood	Worth	Well #2, 160'	15560A	10-15-79 01-07-80 04-15-80 07-10-80	2.2	3	0.4	<0.6
Kingsley	Plymouth	Well #2&3, 37'	15580A	10-22-79 01-21-80 04-21-80 07-21-80	1	Nil		
Rake	Winneshiek	Well #1, 155'	15531A	10-22-79 01-21-80 04-21-80 07-21-80	1.6	1		
Baldwin	Jackson	Well #1, UNK	15583A	10-23-79 01-07-80 04-14-80 07-15-80	1.0	2		
Ogden	Boone	Finished	15612A	10-30-79 01-28-80 04-28-80 07-28-80	0.3	2		

Table 44

UNIVERSITY HYGIENIC LABORATORY
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DEQ MINERAL SAMPLES

Data for September 1980

					pCi/1			
TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	ALPHA	BETA	^{226}Ra	^{228}Ra
Badger	Webster	Well #3, Raw	15656	11-15-79	6.0	3	1.1	
South English	Keokuk	Well #4, 330'	15663	11-29-79	11	13	2.3	
Blue Grass	Iowa	Well #2, 640'	15671	12-06-79	3.8	5	1.2	
Van Horne	Benton	Well #2, 1870'	15674	12-10-79	10.7	7	3.6	
Lansing	Allamakee	Well #2, 805'	15676	12-10-79	3.0	8	2.8	
Blairsburg	Hamilton	Well #1, 350'	15701	12-19-79	10.0	Nil	1.0	
Panama MWS	Shelby	Well #1, 39'	15703	12-20-79	8.4	Nil	0.6	
Delaware	Delaware	Well #1, 335'	15714	12-26-79	3.0	4	0.8	
Dayton	Webster	Well #2, 1240'	15783	01-21-80	13.0	6	3.1	
Farnhamville	Calhoun	Well #1, 776'	15798	01-22-80	6.9	4	1.7	
Mechanicsville	Cedar	Well #3, 455'	15800	01-24-80	3.0	3	0.6	
Dakota S.S.	U.S.G.S.	Well #D-43, 681' FEE	16366	07-10-80	5.6	31	3.4	5.7
Anthon	Woodbury	Well #4, 160'	16372	07-10-80	2.5	12		
Columbus Jct.	Louisa	Well #2, 75'	16373	07-14-80	1.1	Nil		
Battle Creek	Ida	Well #3	16376	07-10-80	1.4	2		
Olin	Jones	Well #2, 170'	16397	07-21-80	0.2	3		

Table 44 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
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DEQ MINERAL SAMPLES

Date for September 1980

					pCi/l			
TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	ALPHA	BETA	^{226}Ra	^{228}Ra
Olin	Jones	Well #1, 180'	16398	07-21-80	0.8	1		
Onslow	Jones	Well #1, 275'	16399	07-21-80	0.4	Nil		
Kingsley	Plymouth	Well #3, 41'	16406	07-21-80	0.8	2		
Bronson	Woodbury	Well #1, 229'	16408	07-21-80	2.1	6		
Alden	Hardin	Well #2, 350'	16413	07-23-80	2.4	Nil		
Moorland	Webster	Well #2	16415	07-23-80	2.5	11		
Decorah	Winneshiek	Well #1, 60'	16416	07-22-80	1.7	5		
Decorah	Winneshiek	Well #2, 60'	16417	07-22-80	1.4	1		
Decorah	Winneshiek	Well #3, 60'	16418	07-22-80	1.3	1		
Decorah	Winneshiek	Well #5, 72'	16419	07-22-80	0.8	1		
Decorah	Winneshiek	Well #6, 78'	16420	07-22-80	1.5	7		
Decorah	Winneshiek	Well #7, 70'	16421	07-22-80	1.4	4		
Livermore	Humboldt	Well #3, 227'	16423	07-24-80	2.1	5		
Oxford Junction	Jones	Well #1, 30'	16426	07-24-80	0.8	Nil		
Farmersburg	Clayton	Well #1, 705'	16428	07-24-80	1.2	6		
Westfield	Plymouth	Well #1, 41'	16444	07-24-80	2.6	9		
Jackson Co. Care Facility	Jackson	Well #3, 600' FEE	16446	07-28-80	1.4	4		

Table 44 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL ANALYSIS
DEQ MINERAL SAMPLES

Date for September 1980

TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	pCi/l			
					ALPHA	BETA	^{226}Ra	^{228}Ra
Hartley	O'Brien	Well #4, 600'	16449	07-29-80	6.4	17	0.4	1.8
Gladbrook	Tama	Well #4, 45'	16452	07-31-80	1.6	5		
Gladbrook	Tama	Well #5, 52'	16453	07-31-80	1.9	4		
Gladbrook	Tama	Well #3, 52'	16455	07-31-80	1.2	2		
Garnevilla	Clayton	Well #4, 840'	16456	07-31-80	1.1	3		
Garnevilla	Clayton	Well #2, 810'	16457	07-31-80	2.2	1		
Hubbard	Hardin	Well #1, Raw	16458	07-31-80	0.9	3		
Hubbard	Hardin	Well #2, Raw	16460	07-31-80	2.0	2		
Hospers	Sioux	Well 510' FEE	16561	07-30-80	7.1	9	3.5	7.0
Winslow Drilling	Lee	Well 1765' FEE	16462	07-30-80	30	7	10.5	2.6
Aplington	Butler	Well #2, 112'	16463	07-31-80	1.7	6		
Aplington	Butler	Well #3, 270'	16464	07-31-80	0.9	6		
New Virginia	Warren	Well #4	16465	08-05-80	0.2	Nil		
Elk Horn	Shelby	Well #9, 42'	16468	08-05-80	0.5	4		
Woodburn	Clarke	Well #1	16473	08-05-80	2.8	Nil		
Radcliffe	Hardin	Well #3, 365'	16475	08-07-80	2.3	Nil		
Univ. IA Oakdale Campus	Johnson	Well 1756'	16476	08-07-80	1.6	4		

Table 44 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
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Data for September 1980

					pCi/l			
TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	ALPHA	BETA	^{226}Ra	^{228}Ra
Univ. Ia. Oakdale Campus	Johnson	Well 1137'	16477	08-07-80	2.4	3		
Steamboat Rock	Hardin	Well #2, 150'	16480	08-08-80	1.8	3		
Dakota S.S.	U.S.G.S. & IGS	Well #D-45, 700' FEE	16482		7.6	20	1.3	0.8
Whiting MWS	Monona	Well #2, 111'	16483	08-12-80	2.2	9		
Whiting	Monona	Well #3, 94'	16484	08-12-80	0.4	16		
Mapleton	Monona	Well #3, 78'	16487	08-12-80	2.4	8		
Mapelton	Monona	Well #5, 681'	16488	08-12-80	2.7	8		
Marquette	Clayton	Well 442'	16490	08-14-80	2.6	2		
McGregor	Clayton	Well #6, 116'	16491	08-14-80	NiL	1		
Creston	Union	Well 12' under surface of lake	16492	08-14-80	0.9	6		
Cedar Falls	Black Hawk	Well #19, 200' FEE	16493	08-14-80	Nil	3		
Winthrop	Buchanan	Well #1, Raw	16495	08-19-80	0.8	5		
Winthrop	Buchanan	Well #2, Raw	16496	08-19-80	1.1	3		
Winthrop	Buchanan	Well #3, 290'	16497	08-19-80	0.7	6		
Lorimor	Union	Well #1, 30'	16501	08-22-80	1.6	Nil		
Afton	Union	Impoundment	16502	08-22-80	0.5	4		

Table 44 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
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DEQ MINERAL SAMPLES

Data for September 1980

					pCi/l			
TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	ALPHA	BETA	^{226}Ra	^{228}Ra
What Cheer	Keokuk	Well East, 258' FEE	16503	08- -80	4.6	21	1.4	0.6
Diagonal	Ringgold	Well #4, 53'	16505	08-27-80	0.7	2		
Diagonal	Ringgold	Well #5, 56'	16506	08-27-80	1.9	5		
Mount Ayr	Ringgold	Surface water supply	16507	08-27-80	1.5	6		
Dakota S.S.	IGS & USGS	Well #D-44, 682' FEE	Lab #c385	07-18-80	8.7	16	2.6	5.9

Table 45

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TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	pCi/l			
					ALPHA	BETA	^{226}Ra	^{228}Ra
Randall	Hamilton	Well #1, 347'	14886A	03-26-79 07-11-79 10-08-79 08-28-80	6.4	9	4.8	<0.6
Andrew	Jackson	Well #2, 1235'	15007A	05-01-79 02-13-80 07-29-80	2.4	9	2.0	2.2
Madrid	Boone	Well #1, 91'	15039A	05-08-79 12-03-79 04-01-80 08-25-80	8.6	6	<0.2	1.7
Cedar Rapids	Linn	Finished	15045B	04-28-79 07-23-79 10-01-79 08-09-80	9.9	Nil	<0.2	<0.5
Holstein	Ida	Well #1, 644'	15100A	05-29-79 11-26-79 02-04-80 07-21-80	3.2	Nil	0.4	<0.6
Sun Valley Water District	Ringgold	Finished	15157B	06-11-79 09-04-79 12-02-79	0.1	5		

Table 45 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
RADIOLOGICAL ANALYSIS
SDWA SAMPLES

Data for September 1980

TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	pCi/l			
					ALPHA	BETA	^{226}Ra	^{228}Ra
West Point	Lee	Well #3, 1900'	15204A	06-12-79 09-17-79 12-03-79 07-30-80	10	16	7.8	1.5
Oxford Junction	Jones	Well #1, 50'	15249A	06-18-79 02-25-80 07-26-80	4.0	3	0.7	0.7
Bettendorf	Scott	Finished	15254A	06-19-79 09-17-79 12-17-79 03-17-80	8.6	3	1.7	1.4
Alden	Hardin	Well #2, 350'	15262A	09-24-79 12-17-79 03-31-80	4.4	4	1.2	2.0
Garner	Hancock	Finished	15279A	06-18-79 11-27-79 06-11-80	2.1	4	1.0	0.6
Dubuque	Dubuque	Well 475'	15292A	02-14-80	3.2	5	1.7	2.0

Table 45 (Continued)

UNIVERSITY HYGIENIC LABORATORY
IOWA CITY, IOWA
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SDWA SAMPLES

Data for September 1980

					pCi/l			
TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	ALPHA	BETA	^{226}Ra	^{228}Ra
Diagonal	Ringgold	Finished	15296A	06-25-79 10-24-79 01-28-80 08-11-80	1.6	2		
Dysart	Tama	Well East, 1850'	15335A	07-02-79 10-29-79 02-11-80 08-04-80	3.4	13	3.3	1.8
Long Grove	Scott	Finished	15359A	07-09-79 10-23-79 02-01-80 09-05-80	1.0	1		
Bremer Co. Care Facility	Bremer	Well #1, 200'	15376A	07-17-79 11-26-79 05-12-80 08-11-80	1.6	2		
Lincoln	Tama	Well #1, 515'	15388A	07-30-79 11-05-79 05-12-80 08-11-80	2.8	Nil	1.2	0.9
Prairie View Acres	Black Hawk	Well #1, Deep	15394A	07-23-79 10-22-79 01-21-80 08-18-80	1.2	Nil		

Table 45 (Continued)

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IOWA CITY, IOWA
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					pCi/l			
TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	ALPHA	BETA	^{226}Ra	^{228}Ra
Cresco (Howard Co. Care Facility)	Howard	Well 250'	15443A	08-20-79 11-26-79 07-14-80 03-03-80	7.7	Nil	<0.2	<0.6
Muscatine (Manjoine Sub-division)	Muscatine	Finished	15497A	02-22-80 05-19-80 08-18-80	1.7	Nil		
Akron	Plymouth	Well #4, 54'	15563A	10-12-79 01-14-80 04-07-80 07-23-80	2.2	4	<0.2	1.7
Charter Oak	Crawford	Finished	15582A	10-22-79 01-21-80 04-23-80 07-21-80	2.0	Nil	<0.2	<0.6
Braddyville	Page	Finished	15667A	12-03-79 03-04-80 06-02-80 09-02-80	1.0	Nil		
Humboldt	Humboldt	Well #3-73, 150'	15668A	12-04-79 03-03-80 06-02-80 09-03-80	1.8	Nil		

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Data for September 1980

TOWN	COUNTY	IDENTIFICATION	MINERAL #	DATE SAMPLED	^{90}Sr (pCi/l)
Odebolt	Sac	Well #8, 2131'	15194A	06-11-79 09-11-79 12-17-79 03-31-80	<0.45

SDWA samples - September 1980

90Sr

DATA - INTERNATIONAL AGENCIES

Radiation Protection Division
Department of National Health and Welfare

Canadian Air and Precipitation Monitoring Program

The Radiation Protection Bureau of the Canadian Department of National Health and Welfare monitors surface air and precipitation in connection with its Radioactive Fallout Study Program. Twenty-four collection stations are located at airports where the sampling equipment is operated by personnel from the Atmospheric Environment Service of the Department of the Environment. Detailed discussions of the sampling procedures, methods of analysis, and interpretation of results of the radioactive fallout program are contained in reports of the Department of National Health and Welfare.

A summary of the sampling procedures and methods of analysis was presented in the May 1969 Issue of *Radiological Health Data and Reports.*

The most recently reported data from this program were published in the December 1974 issue of *Radiation Data and Reports*.

This section will be discontinued in future ERD Reports unless there are some data to publish.

Instituto Nacional de Energia Nuclear
Mexico, D.F.

Mexican Air Monitoring Program

The Instituto Nacional de Energia Nuclear from Mexico with the assistance of several institutions maintains sampling stations at Ensenada, B.C.; Merida, Yuc.; Torreon, Coah.; Chihuahua, Chih.; and Veracruz, Ver.

Airborne particles are collected by 48-hour sampling through glass-fiber-filter paper, using a High Volume Sampler.

Air volumes are calculated by using a flowmeter and a timer. About 2000 m^3 of air are sampled on each Filter.

All samples are sent to the Departamento de Radiactividad Ambiental, in Mexico, D. F., where Filters are analyzed for gross beta radioactivity 72 hours after collection. Gamma spectroscopy and strontium-90 analyses are performed on samples at least two orders of magnitude higher than average.

A monthly summary of gross beta radioactivity for June - December 1977 was reported in ERD 16.

This section will be discontinued in future ERD Reports unless there are some data to publish.

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